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GEOGRAPHICAL, VERSUS SEXUAL, VARIATION
IN *OREORTYX PICTUS*.

BY ROBERT RIDGWAY.

Plate VI.

CERTAIN inconsistencies in the 'Catalogue of the Game Birds in the British Museum,' in the treatment of North American species, have already been referred to by Dr. Allen in his review of that important work.¹ I feel quite sure that all American ornithologists, at least, who are familiar with the geographical and other variations presented by our Grouse and Partridges will fully indorse the reviewer's observation that "it seems about time to expect a more intelligent conception of the subject of subspecies and 'climatic variation' than is shown in the present volume"; but I am sorry Dr. Allen did not give his attention to the remarks on the American Ptarmigans in the Introduction to the 'Catalogue of the Game Birds,' which might be considered "amusing" were

¹ Cf. The Auk, April, 1894, pp. 171, 172.

they not so utterly nonsensical and misleading. The remarks to which I refer read as follows: "I fully anticipate that I shall be blamed by some for having united all the Nearctic 'species' of *Lagopus* described by American authors with *L. rupestris*; but I am sure that unless the practice be adopted of distinguishing *every individual variation* or slight climatic variety by a separate *specific name*, a careful study of these birds will lead to the same conclusion as that to which I have arrived."

The words which I have italicized in the above quotation express exactly what American ornithologists have *not* done; in fact, to do so would be as far as possible from their principles and practice. None of the subspecies of *L. rupestris* recognized in the A. O. U. Check-List are founded on individual variations, but on constant differences between specimens of corresponding seasonal and sexual plumages from distinct geographical areas. Some of these subspecies may be considered "slight climatic varieties," it is true; but their characters, however slight, are constant. These geographical forms are not recognized as "species," as Mr. Ogilvie-Grant intimates, but are distinctly ranked as subspecies—a distinction which some people seem to be unable to comprehend. Furthermore, these subspecies are, in most cases, based on a far larger series of specimens than are possessed by the British Museum.¹

To assume that American ornithologists do not recognize the vast difference between individual variations and those of a climatic or geographical character is to acknowledge inexcusable ignorance of their work or inability to understand the very simple and logical principles upon which it is based.

The subspecies selected for illustration of this article, along with its conspecific type, is perhaps the least satisfactorily differentiated of the forms which are suppressed in the 'Catalogue of the Game Birds.' The characters on which *Oreortyx pictus plumiferus* was separated from *O. pictus* proper consist in its much grayer coloration, with the whole hind-neck and upper back usually bluish gray instead of rich brown, like the back. Mr. Ogilvie-Grant, in his comments on the validity of the form (Cat. B. Brit.

¹ Of *Lagopus rupestris atkhensis*, for example, the U. S. National Museum possesses 29 specimens in summer plumage (May to middle of July), and of *L. r. nelsoni*, 25 specimens of corresponding dates.

Mus., vol. xxii, p. 398, foot-note), ignoring the former character, remarks as follows:—

“Most of the males have the mantle gray, but in some specimens this colour is more or less mixed with olive-brown; on the other hand, most females have the olive-brown continued up the back of the neck to the crest, but some have the upper mantle more or less washed with gray. *I have seen no males with the olive-brown going up to the crest, and no females have the back of the neck and mantle clear gray like the breast* [italics mine]; but several specimens in intermediate plumage belong to both sexes. Ridgway, in his ‘Manual,’ p. 191, recognizes two subspecies . . . and uses these *sexual* characters to distinguish them. He makes out that the brown-necked birds (females) are confined to the Coast-region, while those with gray neck and mantle (males) inhabit the Sierra Nevada. But in a good series of specimens from Carson, Nevada¹, I find many brown-necked birds (all females) as well as gray, and from the Coast-region there is about an equal number of each.”

To show that Mr. Ogilvie-Grant entirely misunderstands my diagnosis of *O. p. plumiferus*, I quote the following from p. 191 of my ‘Manual’:—

“^{a1}. Above deep olive-brown or umber, this color *usually*² continued uninterruptedly over hind-neck to the crest; inner edges of tertials deep buff or ochraceous; forehead entirely ashy. *Hab.* Pacific coast district, from San Francisco north to Washington Territory. 292. *O. pictus* (Dougl.). **Mountain Partridge.**

“^{a2}. Above grayish olive, the hind neck *usually*³ partly or wholly plumbeous, like the breast; inner edges of tertials light buff or buffy whitish; forehead distinctly paler (often whitish) anteriorly. *Hab.* Sierra Nevada (both sides) from Oregon southward; southern coast district of California? Lower California?

292 a. *O. pictus plumiferus* (Gould). **Plumed Partridge.”**

¹ It would be interesting to know where these specimens are and what the author considers a “good series.” Only two specimens from Carson are mentioned in the list of specimens in the British Museum Collection.

² Not italicized in the original, but it should be noted that I was careful to indicate that the character in question was not constant!

Although confident that no mistake had been made in the diagnoses of the two forms and equally certain that the differences were not sexual, I have taken the trouble to again carefully examine all the specimens accessible to me with the view of testing the single character of the color of the hind neck—a character never claimed by me to be of more than secondary importance—and have tabulated the results, which are given below. Only specimens whose sex was determined by the collector are used, and the series was divided, previous to examination as to color of neck, into two series according to the geographical area represented. It will be seen by examination of these tables that the character is *not* sexual, and that it is, as claimed by me, to a large extent geographical. When the character in question fails as an index of locality, other characters do not; gray-naped birds from the Pacific coast being altogether more saturated in their coloration than brown-naped examples from the interior and southern coast districts.

SPECIMENS FROM NORTHERN COAST DISTRICT (NORTH OF SAN FRANCISCO BAY).

No.		Localities	Brown-naped.		Intermediate.		Gray-naped.	
			♂	♀	♂	♀	♂	♀
2831,	U. S. N. M.,	"Columbia River."		*				
" 84569,	"	Coast Range, California.	*					
" 85169,	"	"Oregon."	*					
" 97545,	"	Portland ¹ , Oregon.				*		
" 126349,	"	Victoria, B. C.		*				
" 129370,	"	Sodaville ¹ , Oregon.		*				
" 129371,	"	" "		*				
" 129372,	"	" "		*				
"	Dept. Agric., Yaquina,	"	*					

¹ Both Portland and Sodaville are situated in the valley between the Coast Range and Cascades. These localities are, therefore, intermediate.

SPECIMENS FROM THE SIERRA NEVADA AND SOUTHERN COAST DISTRICTS.

No.		Localities	Sex				Gray-naped.
			Brown-naped.	Intermediate.	♂	♀	
10231,	U. S. N. M.	Ft. Tejon, Cal.					*
" 53662,	"	Carson City, Nevada.					*
" 53663,	"	" " "					*
" 72645,	"	Mts. near Ft. Tejon, Cal.					*
" 72647,	"	" " " "					*
" 73979,	"	Calaveras Co.,					*
" 80083,	"	Walker's Basin,					*
" 84568,	"	San Francisco,					*
" 84569,	"	Carson City, Nevada.					*
" 91969,	"	Baird, California.					*
" 92480,	"	Mt. Shasta, Cal.					*
" 92482,	"	" " "					*
" 95153,	"	Carson City, Nevada.					*
" 95154,	"	" " "					*
" 100330,	"	Campos, Lower California.					*
" 105299,	"	Little Bear Valley, California.					*
" 105300,	"	" " "					*
" 234,	Dept. Agric.,	Argus Range,					*
" 247,	"	Inyo Co.,					*
" 265,	"	" "					*
" —,	"	Coso Mts.,					*
" —,	"	Panamint Mts.,					*
" —,	"	" "					*
" —,	"	" "					*
" —,	"	Cajon Pass,					*
" —,	"	Kern Lake,					*
" 4058,	A. K. Fisher.	San Gabriel Mts.,					*

THE HABITS AND INDIVIDUALITIES OF THE RED-SHOULDERED HAWK (*BUTEO LINEATUS*)
IN THE VICINITY OF BROOK-LINE, MASS.¹

BY FRED. H. KENNARD.

THIS paper is intended to give, so far as is possible, the result of my own personal observations of this bird and its habits,

¹ Read before the Nuttall Ornithological Club, March 19, 1894.

through a number of years. All the data and deductions therefrom are entirely my own, and necessarily limited. Therefore, if they are at all at variance with the opinions of others on the subject, such non-agreements may be excused perhaps, on account of the small area over which my observations have been made, or perhaps on account of the local individualities of the birds observed.

While I had watched several pairs of birds for a number of years, and shinned almost every tree within a radius of ten miles from Brookline that looked as though it might have a Hawk's nest in it, I had been principally conversant with squirrels' and crows' nests, owing to my lack of knowledge of the Hawk's habits; and it was not till 1884 that my real experience began, and that I began to understand the habits of the bird, as well as the proper trees to climb.

Since 1884 I can safely say I have never, but on two or three occasions, climbed to any nests that I supposed to be Hawks' nests, and not found them either inhabited or just robbed. These two or three occasions were when the old Hawks had been using some old nest for a roosting or feeding place, and had deceived me by the feathers they had left about the edge of the nest.

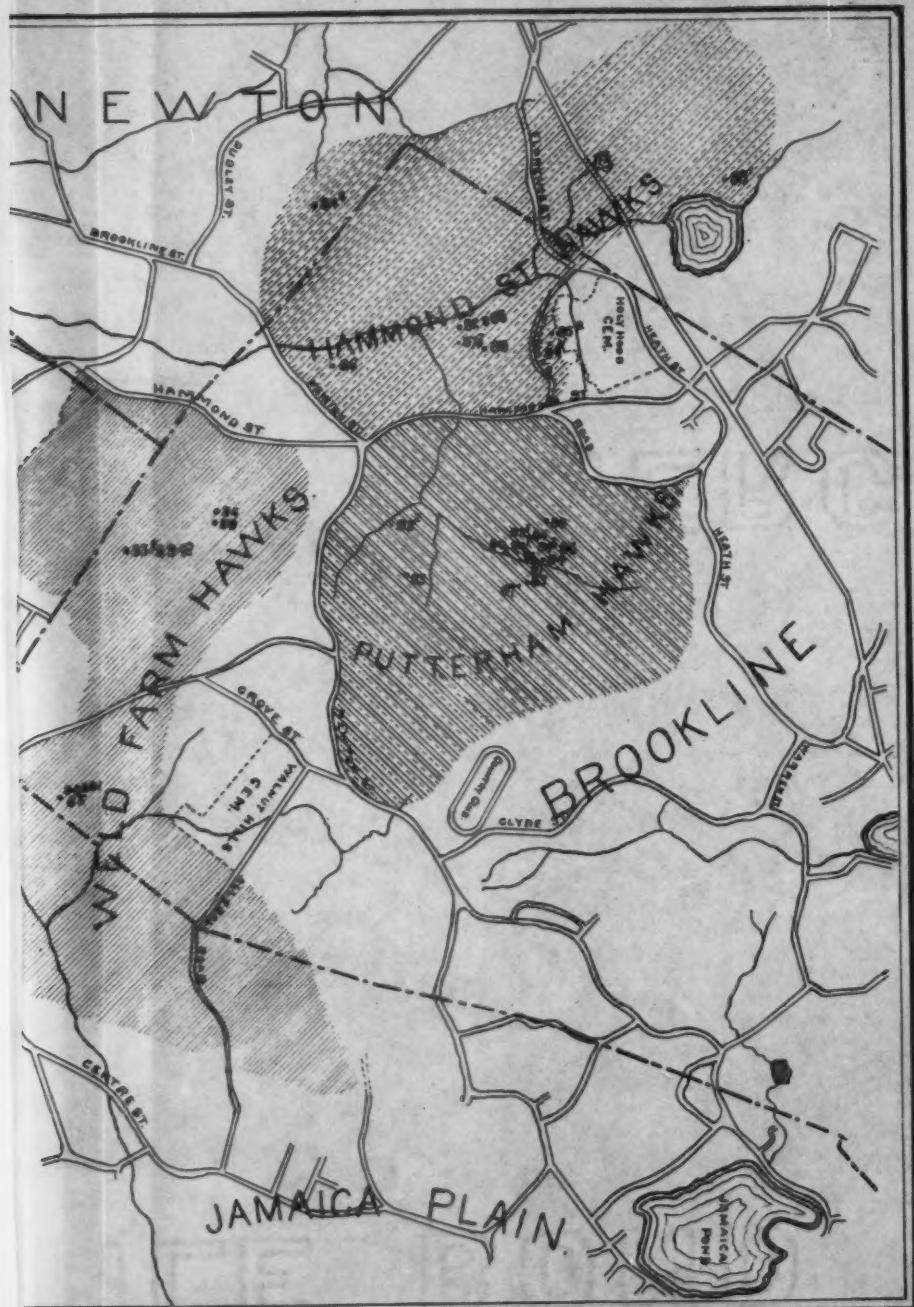
I would hereby recommend that any one in search of Hawks' nests should invariably carry opera glasses. It may save many feet of useless climbing.

For the sake of convenience, I will take up each pair of birds separately, and go through with their histories one at a time, rather than take them up in the order of my observations, and chronicle them by years. Again, for convenience, I have called each pair by a rather arbitrary and local name, on account of the particular territory in which they are most frequently seen, and in which they almost invariably chose to build.

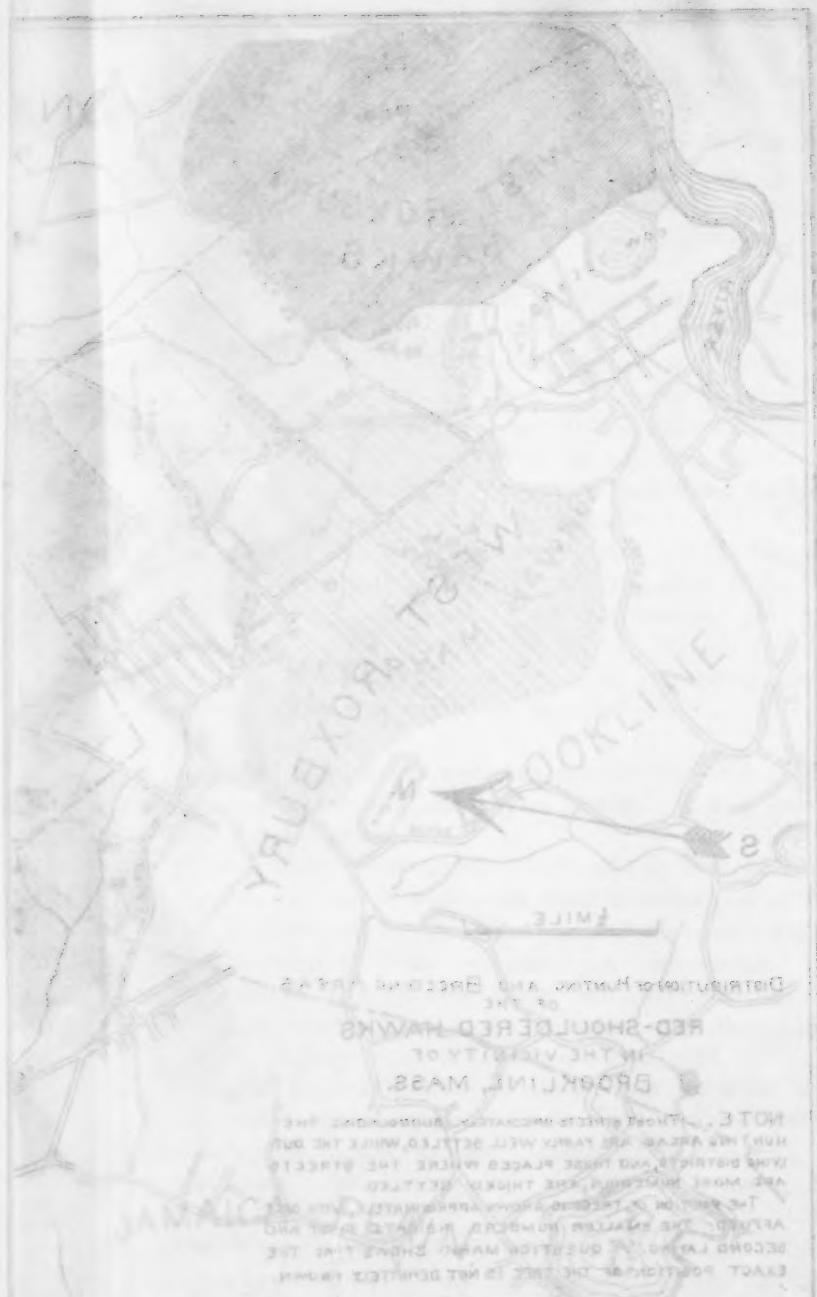
There are but four pairs with whom I am on at all intimate terms, and at whose abodes I am received as a regular visitor. My data with regard to other Hawks of this species, whose acquaintance I may have made casually, as it were, I have purposely left out.

The Weld Farm Hawks have been thus called because of their marked fondness for that locality on the border line between









Brookline and West Roxbury, Mass., near the Weld Farm. The West Roxbury Hawks must not get mixed up with the above pair, as they live some two miles away, in a territory of their own, by the side of Charles River.

What I call the Hammond Street Hawks live invariably on the Newton side of Hammond Street, Brookline, sometimes in Newton, and sometimes on the Brookline side of the boundary line; though never coming to the Brookline side of Hammond Street, as that side is invariably occupied by what I call the Putterham Hawks.

I will take up with these Hawks in the above order, leaving the Putterham pair till the last, as they are perhaps of the most interest.

The Weld Farm Hawks inhabit a territory which is perhaps longer and more rambling in extent than any of the others, and which partly accounts for the fact that my observations of them have been fewer than of the others. They are also the shyest of all my friends, and have invariably built in the hardest trees to climb. They are very quiet, only screaming when it seems absolutely necessary for them to do so, in order to scare up their prey; and while they have built in almost every case nearer houses than any other pair, they seem to show a much more marked antipathy to coming either near their nest or near any one who is trying to watch them.

Though I have watched their nests for hours at a time, and until I should have thought their eggs would have spoiled, I have never been able to get a shot at them; and on only one occasion, when I covered myself up with leaves and sticks, have I known of their coming back to their nest while I watched, after once having been disturbed. Then, too, the female invariably got off the nest at my distant approach, and never waited till I pounded on the trunk of the tree, as other Hawks frequently do. Many Hawks, when one is robbing them, will come back and fly around screaming, either in the immediate vicinity or else high overhead. This pair never went through any such performance, but invariably and quietly disappeared.

It was on April 23, 1884, that I discovered my first nest of this pair, placed between 80 and 90 feet from the ground, at the top of a very tall and spindling soft-pine, at the foot of a high hill,

and by the side of a large swamp. The nest was so high up, and seemingly so old, that I should never have noticed it had it not been for the immense amount of downy feathers which clung to every outstanding stick or leaf. I was riding through the woods at the time, and had no climbing-irons, and so left the vicinity, as there was no Hawk in sight, and returned in the afternoon with a buggy, an Irishman, climbers, a two-bushel basket, and many fathoms of my mother's best clothes-line.

I had to cover myself up for over two hours before the Hawk would show herself sufficiently to be identified, and even then she only flew up, looked at the nest, and then quickly flapped off again. I managed to shin the tree, and procured the nest, as well as a set of two very peculiar, muddy-colored, and small-sized eggs, which were about one-half hatched.

On April 20, 1885, I found what I took to be this pair's nest about 40 feet up in the crotch of an enormous chestnut tree which grew beside a marsh near Weld Farm, and about three-quarters of a mile from where I had found it the year before. This nest was also covered with feathers, but after a terribly laborious climb, I found no eggs, neither did I even see the Hawks around it. Who or what robbed it, and how he or it got up to it, I never found out, unless by a tall ladder, for there were no marks of climbing upon the bark of the tree.

On April 14, 1886, I found another nest of what I now know to be this same pair, built in the crotch of a large oak, about 30 feet from the ground, and covered with feathers as the last two had been. This oak grew on a low hillside that overlooked some meadows, through which a brook ran, and was only about 100 yards from the nest of the previous year.

The Hawks behaved in exactly the same manner as they had on previous occasions. The nest was similar, and what is of more consequence, the eggs, four in number, which were about one-fourth hatched, were precisely like those found in 1884, queer, small, and mud-colored. I tried for nearly two hours to get a shot at the Hawks, but they never showed themselves even at the distance in that time.

I was unable to go after Hawks in 1887 at all, and while I have reason to think that this pair built in the same locality in 1888, only farther towards Jamaica Plain, I was unable to find their nest.

In 1889, April 24, I again found their nest in a tall pine, almost where I had found it in 1884. These eggs, which were four in number and almost fresh, were procured by Mr. N. A. Francis. They were, however, entirely different from those I had found in previous years, and of a more ordinary type: and the nest, too, was less surrounded by feathers, probably on account of the shortness of the time that the birds had been setting. Perhaps the old female Hawk had been shot. If she had not, she had entirely changed her views with regard to egg coloration.

In 1890 and 1891, I again observed these birds in the same locality, but was unable to find their nests, owing to the size of their territory, and the fact that they were apt to build in deciduous trees. One can easily examine all the evergreens in the vicinity, as there are comparatively few, but deciduous trees are often too numerous.¹

On April 24, 1892, I, however, found the nest again, near where I had found it in 1886. This time they had built in a pine, and about 75 feet from the ground. The eggs, four in number, and about one-fourth hatched, were similar to those procured in 1889; and as the female appeared to be much tamer than the one that built here in '84, '85, and '86, I concluded that perhaps I was right in inferring that she was new, and that her predecessor had perhaps been shot sometime during the year 1887.

During the winter of '92 and '93, most of the country through which this pair had been accustomed to hunt was denuded of trees, and it was not till late in June that I finally discovered that these Hawks had built in a large swamp, near to their nesting places of 1884 and 1889.

So it can be seen that this pair had a strict liking for one locality, even if that was an extended one. They invariably built in very large trees, three times in high and spindling pines, once in an enormous oak, and once in a tall chestnut. They are extremely shy and wary and very quiet.

¹ Since writing the above, Mr. A. L. Reagh, who lives in West Roxbury, has written me that in 1890 and 1891 this pair built in what was probably the same enormous chestnut that they had built in in 1885. He knows that they raised the 1890 brood, and is quite positive that they also raised the 1891 brood, as he saw young Hawks around there in the summer. I did not visit this tree in these years, as a house had been built near by, and I thought that the Hawks would probably build farther off.

The West Roxbury Hawks showed a very different individuality from the above pair. They were quite tame and very noisy, much more local in their habitat, and though they often built in large trees, they never built far from the ground, and always in a tree very easy to climb.

I first became acquainted with this pair on April 22, 1885. I found their nest, which contained one fresh egg, about 40 feet or three-fourths of the way up a small pine, which grew at the edge of, and leaned out over a small pond.

The female was very tame, and so hard to get off of the nest that pounding had no visible effect, and I was finally compelled to throw sticks at her. She was very vociferous after I had dislodged her, and flew screaming high above my head.

I came back here on April 25, and procured two handsome eggs, while the female acted as she had three days before.¹

On April 17, 1886, I again found this bird's nest, this time in a small hemlock that grew on a ridge about 30 feet high, on the opposite side of this same pond. I procured three fresh eggs, similar to those of the previous year, and also trapped the female Hawk. I tried to get her down the tree alive, but she was too fierce, and I was compelled to shoot her before I could climb near her.

I did not visit this place either during 1887 or 1888, but know that the male had mated again, as I found the deserted nest of this pair both in 1889 and 1890, and saw and heard both birds often. Both times they had built in a dark swamp, about two hundred yards from where I had previously found the nest, and each time in such easy trees to climb and in such conspicuous places that somebody else had got ahead of me. On May 26, 1891, I found the nest of this same pair of birds in this same swamp, and I copy from my notes as follows: "A nest in a tall large pine, forty feet up, and containing two downy young. They cried just like the old ones, and the female sat around on the neighboring trees, and often flew quite close to me. She seemed

¹ The female of this pair was evidently an immature specimen, and the eggs were very small, and the date of their laying was rather late for this species. Having found other nests where similar conditions prevailed, I infer that there is a possibility that young Hawks may breed a little later than they do when older, and perhaps their first eggs may be smaller.

very much worried, particularly when I was wringing the neck of one of the young. His crop and stomach proved to be full of feathers from some small birds, not distinguishable, hair and bones; and besides all this, he had pieces of a frog, one whole mole, and a snake ten inches long,—a moderate lunch for a youngster, who could hardly have been a fortnight old! He, by the way, was much the larger of the two. May 31, 1891, I returned to this nest and took the remaining young one. He had grown much in five days."

In fact he who had been the smaller one on the 26th was now, five days later, as much bigger as the other one had been bigger than he. "His crop and stomach contained feathers, hair, bones, etc., besides parts of two frogs, and a mole. No wonder he grew! I wonder that the Partridge, whose nest I found near the foot of this tree, had been left unmolested!"

On April 28, 1892, Mr. N. A. Francis procured three eggs from a nest built by this same pair in the same small swamp in a very large, easily climbed tree, such as they always seemed to show such a preference for.

In 1893, though I saw this pair in the vicinity, I was for some reason entirely unable to find a trace of their nest. Perhaps they had taken to a deciduous tree in a very large and adjoining swamp, and were harder to find on this account.

Here is a pair of Hawks whose individualities are quite distinct from those of the previous pair. Instead of choosing several places distributed over an area of several square miles, they seem to have built almost invariably in a place not one-eighth of a mile square. While the previous pair were wild, shy, and seldom noisy, and built in high trees, either evergreen or deciduous, this pair were comparatively tame and confidential and very noisy, and so far as I know, always chose easily accessible evergreen trees for their nesting, and the female almost always waited till I pounded the tree before departing.

The Hammond Street Hawks first came to my immediate notice April 17, 1884, when I found a set of three fresh eggs in a nest built about 30 feet up a fair sized pine, by the side of a swamp, and in a very conspicuous place. There was nothing unusual about the nest, it being a bulky structure of twigs, leaves, etc., and lined with fresh hemlock boughs and strips of

long, stringy bark. The female has proved to be just an average Hawk not especially wild, and yet knowing how to keep her distance, always waiting till I have approached quite near the tree before flying off, and never waiting till I pounded on the trunk, as the West Roxbury birds did.

On April 23, 1885, I found the nest of this pair built near the top of an enormous hemlock nearly 60 feet from the ground, on a hillside beside a swamp, nearly a mile from the scene of last year's capture, and it was an exceptional case for this pair. I never knew them to go so far again, and I never knew them to build in any but small trees in very open woods, except on this one occasion.

On May 23, 1885, just one month later, I found the second nest of this bird in the top crotch of a small slender oak, about 40 feet from the ground, right beside the pine in which the nest had been built the previous year. There were three boys, each doing his best to climb up to the nest, without avail. I felt my honor at stake; and so, though I was clad in my Sunday best, I climbed that tree and got three fresh eggs for my pains.

April 15, 1886, I found this pair of Hawks apparently building a nest in a slender red maple in sight of the street, and not far from the scene of my last find. It proved, however, that they were obtaining sticks from an old nest, and were building three-fourths of a mile away, on the other side of the marsh, in a low pine tree. This nest was too near a Gypsy encampment, and I procured no eggs.

April 14, 1888, I went up to a Hawk's nest in this same locality, built in the crotch of a slender chestnut tree in a very conspicuous place, beside a path. It contained two Hawk's eggs, and one broken hen's egg. As the set was evidently imperfect, and as I did not care for the two remaining eggs on that account, I placed two steel traps in the bottom of the nest and waited around for three-quarters of an hour, with no result. I returned on the next day, however, and found both Hawks had been caught by their legs. I was unable to get them alive, and keep my own skin whole, and so was forced to shoot them.

I found out afterwards that Mr. J. A. Lowell of Chestnut Hill, Mass., had taken two eggs from this nest on April 7, and left two hen's eggs in their place, thus making the total number of the set four.

I have since ascertained that Mr. J. A. Lowell found what was probably this same pair breeding in the same locality, as follows: Last of May, 1882, three young in a chestnut tree; middle of April, 1883, three eggs from the *same* nest; May 13, 1884, two eggs in a hemlock tree (probably second brood); April 7, 1887, three eggs in a white pine; thus filling out my list, and accounting for this pair for every year.

This pair seems to have shown a marked liking for a certain not very large area, and they never but once strayed beyond it. They never but once chose a large tree, and did not seem to like evergreen trees any more than deciduous trees, and were, on that account, harder to find than the West Roxbury pair. They built three times in pines, twice in hemlocks, three times in chestnuts, and once in an oak: only once more than forty feet above the ground, and generally less, and almost always in conspicuous places. I have never known of their crossing Hammond Street, though their territory bordered it for half a mile, for on the other side of this street, and in a parallel area, is the abode of the Putterham Hawks. I have but seldom seen the Putterham birds cross Hammond Street, and I have never known of their building on any but their own side. Their territory is more compact than that of the Hammond Street pair, and contains thicker woods and more evergreen trees. As they are bounded on the west by the territory of the Hammond Street pair, and on the south by that of the Weld Farm pair, I have noticed that when not in their very particular haunts, they may be found to the north and east, which is pretty well civilized. Thus it is that each pair of these birds seems to hunt over its own area exclusively, and by a tacit understanding, never seems to trespass upon that of its neighbor. I have often been in a position to hear and see both the Hammond Street and Putterham pairs at once, and I have never seen them even so much as shake hands over their boundary line.

Though I had known of the Putterham Hawks for several years, and had known of others finding their nests, and in 1884 had found a nest myself in a pine, that had just been robbed of three eggs, it was not until 1885, on April 19, that I got my real introduction to them. This nest, containing three fresh eggs, was placed about 35 feet up in a large pine, in some wet woods about 150 yards from last year's nest.

On March 29, 1886, I found a nest with two fresh eggs, within 50 yards of where the nest had been built in 1884. I set traps in the nest, and on April 1, I found the female caught. She had also laid a soft-shelled egg, which showed that my set of two eggs was incomplete. The male mourned the loss of his mate only until he could get another, which he did during the following spring; and they built again in a pine tree near this same place in 1887. This nest was found and robbed by a friend of mine.

On April 20, 1888, I got two eggs out of a nest in the crotch of a chestnut tree beside a path about a half of a mile away. It was a full set, as I watched it several days before taking it. The male bird, which I caught but let go again, did some of the setting, and was so small that I was puzzled till I caught him as to his identity.

On April 9, 1889, I saw feathers in the above nest, and on this account shinned up to it, only to find the nest empty. About 100 yards off, however, I found in a slender oak the bird's real nest with two fresh eggs, and was forced to infer that they had been using nest number one for a resting and feeding place only. As I did not want to 'get left' this way again, I knocked the nest, from which I had just taken the eggs, out of the tree, of which more anon.

On April 13, 1890, I found one egg in a nest in a low pine in a dark swamp, about 100 yards from the last nest. I shot the male Hawk as he flew off, taking him for an instant for a Cooper's Hawk which I knew was breeding somewhere near; so I was compelled to take the egg, as I doubted whether the female would go on any further with the duties of maternity.

This nest, by the way, was an old nest, and one in which I had seen feathers two years before. I had then climbed the tree and found some of the feathers and bones of a Partridge, on which one of these Hawks had probably been feeding.

April 16, 1891, the female had evidently got a new mate, for I found a set of three eggs in an old nest placed perhaps forty feet up in the crotch of a tall chestnut, and within 50 feet of the place where I had found their nest in 1884. This nest had, I think, been built for a second set, in May, 1889. It was not there in April of that year, and I found it there that autumn. In 1890 I had come very near climbing up to it because of

feathers around it, but I was fortunately prevented by the timely finding of the real nest in a pine tree near by, as told above.

In 1892 this pair built in the same slender oak from which I had knocked their nest in 1889, and in identically the same crotch. Somebody, however, had robbed it before I found it. Still these birds were not discouraged, for on June 22 of the same year Mr. Francis took three fresh eggs from a nest which I feel sure belonged to this pair, built about a half a mile off on the other side of a swamp.

On June 10, 1893, after searching for the nest of this pair intermittently, though carefully, for two months, I finally located them about 50 feet up in an enormous pine, about a half a mile from their usual location. I had always wondered why these Hawks did not build in this pine, or in one of the group to which it belonged, for they are all nearly 150 feet high, and about four to five feet in diameter at the base; but, nevertheless, I became, to put it mildly, a trifle chagrined when I found where the nest really was.

On June 12 I returned, and by the aid of ropes, strings, climbing irons, and two other people, I managed to get up the tree, though it took me twenty minutes to do so, and less than twenty seconds to come down.

There were three young birds, which I will describe later; and while their parents flew screaming around my head, I lowered them down in a basket and took them home alive, leaving their persevering parents to start anew, if they cared to.

This pair seem to have shown no particular preference in their choice of trees, as they built five times in evergreens and five times in deciduous trees. They evidently preferred one small locality for their nesting, though their hunting grounds were quite extensive.

Summing up, and comparing the histories of these birds, so far as I can judge from my limited experience, I should say that they almost invariably choose as a place for nesting, a tree, either evergreen or deciduous, beside some swamp, brook, or wet meadow; and if they once learn to feel at home in a certain locality, provided that that locality does not become too open and civilized, they will almost invariably return to it, even when repeatedly disturbed.

If they are both killed, and their hunting grounds are good, these are soon occupied by others; or if one is killed, the other soon returns with a new mate. After I had killed the Hammond Street Hawks in 1888, Mr. Lowell writes me that in May, 1891, he found a nest containing two young birds in this same territory; and on April 8, 1892, he procured two fresh eggs from the same nest. This would go to show that if there is good hunting territory, whose owners vacate for some reason, it is immediately taken possession of by the young of some of their neighbors.

Once laying claim to any territory they are exclusive to a degree. This exclusiveness, however, seems to apply to their own species merely, for other Hawks are allowed to hunt in their territories at will. I have known of a Sharp-shinned Hawk's nest being almost within a stone's throw of a Marsh Hawk's nest, and both these nests to be on the borders of a meadow, beside which a pair of Red-shouldered Hawks nested each year. Four times in my life I have known of Cooper's Hawks building either in sight of, or almost beside the nest of a Red-shouldered Hawk.

In their choice of trees in which to build they show a wide diversity and often a strict individuality, and in most cases, a marked love of locality which may be more or less modified by the individuality of the bird.

In their habits, too, each pair seems to show its own characteristics, some being shy and quiet, others very noisy and easily approached. I noticed, too, that those Hawks whose hunting grounds are thickest and contain the best timber and the most evergreen trees are most apt to winter with us; for instance, the Putterham pair are almost always to be found and heard winter as well as summer, while the Hammond Street pair, whose grounds are bleak, are almost never to be found during the winter. While many of these Hawks stay with us all the year round, I believe there is a certain migratory movement among them, for I know they become less in number in winter, and the only reasonable inference is that some of them go South. During the past winter, 1893-'94, until Feb. 22, when I again saw one of the Putterham birds, I have failed to see any of these Hawks, though often in the field. Even the Putterham birds seem to

have been scared away by the severe weather of December, to return only when warmer weather was promised.

That they may return in consecutive years to the same nest, if not disturbed, and sometimes even when they have been disturbed, I have no doubt. I personally have never found them laying in the same nest two years in succession, though I have known of their using the same nest twice, with an interval between. They seem very apt to use their old nests for roosting and feeding places, as feathers from them, as well as from birds they have killed, would seem to indicate.

Although the Report on 'Hawks and Owls,' issued by the Agricultural Department, seems to show that this bird is not only harmless, but truly beneficial, I must say that Hawks differ, and Red-shouldered Hawks certainly.

If it were not for this personal equation, this individual characteristic, as it were, where would the teachings of Darwin and Spencer be?

In each of the Hawks of this species that I have examined, I have invariably found feathers and birds' bones, and lots of them. The frogs alone, of which they eat great numbers, would seem to more than balance the injurious rodents of which they are also fond; and as for insects, I do not believe that the Brookline Red-shouldered Hawks eat as many in a year as an ordinary frog could in a day. They must differ in their habits, and accommodate themselves to their surroundings. Perhaps they are, as a species, beneficial, particularly where they hunt in open country; but in such country as we have around Brookline, I am sure they do more harm than good. Both birds help build their nest, a more or less clumsy structure of twigs, dried leaves, etc., and almost invariably lined with fresh hemlock or pine boughs and the long stringy inner bark of the hemlock tree or the outer bark of the wild grape vine. The male also assists in the incubation. When their nest is disturbed they are more or less officious according to their individuality, and according to the length of time they have been setting. They are particularly worried if their young are disturbed, though I have never known of their really attacking a man. They may do so in the far West; but they know us too well in the East.

Their eggs, so far as I can judge, are generally laid at intervals of about two days, and I have often noticed that if there is any

material difference in the quantity of markings, that the egg that is first laid has the most, while the last is most free from spots.

With regard to their second laying when disturbed, it is necessarily hard to get accurate data, and I am not at all certain that they always do lay again. I do know, however, that they are extremely erratic, both as to time and place, when they do lay again. If you have learned to know a pair, you can tell pretty well about where their first nest will be; but their second nest hardly ever, for they are very apt to go off to some unexpected place in some swamp or elsewhere, where you have never known of their breeding before.¹

NOTES ON THE GENUS *HELEODYTES*, WITH A DESCRIPTION OF A NEW SUBSPECIES.

BY A. W. ANTHONY.

IN HIS catalogue of the 'Birds of Lower California' Mr. Bryant makes mention of the unusually heavy markings on the lower parts of all of the *Heleodytes affinis* taken by him on the overland trip from Magdalena Bay to San Quintin. It was these notes on the species that suggested the investigation that led to the present paper.

During my first season in Lower California (1887) collections were made from Ensenada—sixty miles south of San Diego—to San Anderes, about Lat. $28^{\circ} 30'$, covering a distance of about two hundred miles in latitude. A fair series of Cactus Wrens were taken, but these, unfortunately, were stolen, together with my entire season's collection. Later a series was secured from about San Quintin and San Telmo—fifty miles north—but the gap of about one hundred and fifty miles that intervenes between Mr. Bryant's northernmost specimens and mine from San Quintin remains unrepresented. However, a sufficient series of Peninsula and Southern California skins has been brought together to change, somewhat, the status of both the Cape species as well as

¹ The 1894 nests, found since this paper was written, have been added on the accompanying map.

the birds from the northern part of the Peninsula and adjacent region of San Diego County, California. Unfortunately no specimens are obtainable from the mouth of the Colorado River and Gulf coast of Lower California, though Mr. F. Stephens has kindly loaned me, among others, a specimen from the Colorado Desert and two from Sonora.

Beginning with a specimen from La Paz (No. 15,003, Coll. Wm. Brewster, April 4, 1887), which Mr. Brewster assures me is perfectly typical *H. affinis*, I find the entire lower parts well spotted with black, evenly distributed and of equal size on the breast and lower parts. Those on the lower tail-coverts are larger and on the chin slightly smaller; across the breast the spots are not quite so well defined and are a very little more abundant, suggesting somewhat the nebulous spotting of this region in typical *H. brunneicapillus*. On the flanks and belly there is the faintest possible suggestion of the rufous found in *brunneicapillus*. All but the central tail feathers are fully barred on the inner webs with quadrate white spots, reaching nearly or quite to the shaft.

Another specimen from La Paz, collected by L. Belding, bears upon the label, in Mr. Belding's handwriting, "Typical (B.)." This shows rather heavier marks upon the throat and upper breast but is otherwise the counterpart of the first described. A third skin (No. 216, California Acad. of Science) is labeled "La Paz, Lower California," but is without other data. This specimen represents fairly well the Wren met with much farther north, but differs from either of the others in a more heavily spotted throat and breast and smaller spots on the sides and belly. The latter feature is, however, not at all prominent in any of the Peninsula skins I have examined and is perhaps more pronounced in the present specimen than in any I have seen from Lower California.

Coming northward along the Peninsula a very heavily spotted race is met with, which reaches its highest development, as far as can be ascertained by the series now at hand, at San Telmo, about fifty miles north of San Quintin.

This subspecies I propose to name *Heleodytes brunneicapillus bryanti*, in honor of Mr. W. E. Bryant, whose name is too well known in connection with the ornithology of Lower California to make comment on my part necessary.

***Heleodytes brunneicapillus bryanti*, subsp. nov.**

Type, No. 3879, Coll. A. W. A., San Telmo, Lower California, April 30, 1893.

Subsp. char.—Differing from *affinis* in very much heavier spotting of lower parts, the black predominating, in extreme specimens, on the throat and upper breast, and in its perfectly barred tail and slight wash of rufous on belly and flanks; from *brunneicapillus* by heavier spotting, especially on sides and belly, in having intermediate rectrices more or less perfectly barred, and in much less rusty wash on lower parts.

The proposed subspecies is readily distinguished from either *H. affinis* or *H. brunneicapillus* by its much more heavily spotted lower parts; in other respects it is practically intermediate. In *brunneicapillus* the heavy band of semicircular or ovate black spots that covers the breast and throat abruptly gives place on the lower breast, sides and belly to a much less conspicuous spotting, elliptical or linear in shape. *H. affinis* is not more conspicuously spotted on the breast and jugulum than elsewhere, and the spots are rounded or ovate on the sides and belly as well as the breast. *H. b. bryanti*, on the other hand, while more heavily spotted than either, exhibits a conspicuously darker jugulum and breast, as in *brunneicapillus*, with the rounded or ovate spots of *affinis* on the sides and belly.

As a rule *bryanti* exhibits a fully barred tail as in *affinis*; occasionally, however, one or more of the intermediate feathers has light spots indenting the inner web in place of reaching the shaft. In the Lower California series there is but little variation in the markings of the rectrices, but when southern California is reached there is a confusion of markings that makes classification seem at first almost hopeless. In the series before me can be found birds with tails typical of *brunneicapillus*, i. e., with first feather barred only on the inner web. Others have all the feathers barred except the two central ones, as in *affinis*; and, of course, there are all the intermediate changes between the two extremes. A closer examination, however, shows two general types with, of course, some few that are as easily referred to one as the other. Birds with heavily spotted breasts, and sides with large ovate spots, exhibit the well barred tails, and little, if any, rufous on the flanks, while linear spots on the lower parts, which

in such cases are less conspicuously spotted below than on breast and jugulum, are as sure to have a heavier wash of rufous and only the first rectrix barred with, perhaps, one or two more or less perfect bars on the lower fourth of the second, or white spots indenting the webs of some of the others.

The tails of specimens from western San Diego County are not always the same on both sides, several being found that are noticeably different. No. 127, Calif. Acad. Science, San Diego, Cal., Mar. 15, 1884, which is referable to *bryanti*, has the right side fully barred to the sixth feather, the left equally well marked to the third inclusive, the fourth and fifth showing small white spots where the bars should be. East of the Cuyamaca Mts., I am unable to find any indication of either *bryanti* or *affinis*, but my specimens from that region are unfortunately very few. A specimen from Walfers, Colorado Desert, Coll. F. Stephens, Jan. 1890, exhibits a heavily marked throat and breast with abruptly smaller, linear spots on the sides and belly—in all respects indistinguishable from Arizona and New Mexico skins.

In connection with the foregoing notes on the series from San Diego County, I would call attention to Prof. Baird's remarks in 'Review of American Birds' on Lafresnaye's description of *brunneicapillus*: "I find it quite impossible to reconcile Lafresnaye's description of *C. brunneicapillus*, much less his figures, with the North American bird. This is described as having five white spots on the outer web of the lateral tail feather, and three on the inner, the next with two on the outer and three on the inner (perhaps three on the outer and two inner), the third and fourth with marginal points instead of spots." The specimen is said to have come from California and I think that it would be very easy to match the above description with a bird from the immediate vicinity of San Diego, though in nearly all of those before me the number of bars, ranging from five to seven, are the same on both webs, but are occasionally one less on the inner. The marginal points on the third and fourth feathers is a common feature. Lafresnaye, however, describes the under parts of his bird as pale rufous from the upper part of the breast to the tail. In all specimens I have examined the rufous is confined to the flanks and abdomen alone and is not so

pronounced in western San Diego County skins as those from San Bernardino County (Cal.), Arizona, and New Mexico. As far as the description of the rectrices is concerned it would seem as if the type might very possibly have been one of the intermediate birds I have described, in which case the bird of the interior would be eligible to a new name. Owing, however, to very reasonable doubts as to its origin, it is probably better for the present, at least, to recognize the name as it has stood. It will be necessary, as has been proven by the series before me, to reduce the heretofore species *affinis* to the rank of a subspecies of *brunneicapillus*.

Since the preceding was written a further series of Peninsula specimens has been taken from San Quintin to San Fernando, thus making an almost complete chain from San Diego to Cape St. Lucas. The more southern skins, from San Fernando, are rather nearer *affinis* than *bryanti* but are typical of neither. Owing to lack of material I am unable to make a satisfactory disposition of the Cactus Wrens from north of the boundary. The series at hand points toward a race inhabiting the southwestern part of California, differing from the bird of Arizona, New Mexico and Texas. It would be unwise, however, to attempt to assign definite characters or habitat without much more material than is at present accessible.

Mr. Ridgway writes me that a series of skins from Guymas, Sonora, exhibit exactly the characters of my San Diego County skins as regards tail markings—a more or less complete barring on the inner webs—pointing toward an intergradation with the Lower Californian forms along the Gulf Coast and border of the United States.

I am greatly indebted to Messrs. W. E. Bryant, F. Stephens and William Brewster for the loan of valuable specimens used in this connection, and also to Mr. R. Ridgway for notes on the specimens in the National Museum Collection.

ORNITHOLOGICAL NOTES ON A FLYING TRIP
THROUGH KANSAS, NEW MEXICO,
ARIZONA AND TEXAS.

BY HENRY K. COALE.

HAVING occasion to visit a number of United States Army Posts in the Southwest, I left Chicago March 15, 1890, taking along a collecting outfit, although the trip was made with another object in view. The present paper does not pretend to be a list of the birds inhabiting the localities visited, being simply a record of such observations as came under the writer's notice during the few hours spent in collecting specimens in the vicinity of the Military Posts.

It was with pleasant anticipations that the trip was begun, which was to carry me into new fields and among the many (to me) rare birds that I had only before read of in books, or seen in collections. The day I left Chicago Canada Geese and Herring Gulls were flying over in a northwesterly direction. In passing through Missouri flocks of Blackbirds, Juncos, Horned Larks and other early spring migrants were seen in the fields along the road. The weather was perfect, except where otherwise noted.

Fort Leavenworth, Kan., March 16, 1892. On a bluff overlooking the Missouri River. In the great elms that surround the parade ground numbers of Bluebirds, Baltimore Orioles and Robins were singing their glad songs to the awakening of spring. Meadowlarks, Goldfinches and Downy Woodpeckers were plentiful about the Post.

Fort Riley, Kan., March 18. On the U. P. R. R., northeast of the center of the State, on the Smokey River. Spent a few hours in the bottomlands across the river, where a luxuriant growth of trees and bushes afforded shelter for troops of Cardinal Grosbeaks, Slate-colored Juncos, Fox and Song Sparrows, Black-capped Titmice, Vireos and other familiar birds. A small flock of *Zonotrichia querula* was feeding in the tops of some bushes. A shot brought down a male and female; the rest flew away and were not again met with.

Fort Logan, Colo., March 20. Seven miles from Denver. A barren sand desert, with a scant growth of trees along Clear Creek. Birds were exceedingly scarce, a ride of ten miles with Mr. H. G. Smith, Jr., a local collector, revealing less than a dozen birds, except Black-billed Magpies, which were common. *Melospiza fasciata montana*, *Junco annectens* and *Merula migratoria propinqua* were the only species secured. The English Sparrow of the eastern cities is replaced in Denver by the House Finch, which builds its nest under cornices of the big down town stores. It perches on the office window sills and sings prettily. It was found to be common at nearly all the frontier posts, building under the low roofs of the verandas, on any suitable projection.

Fort Union, N. M., March 22. On a level plain ten miles from Watrous. About a mile back of the post is the old abandoned Arsenal which was Kit Carson's headquarters during the war. His house and garden are now in a very dilapidated condition. *Pipilo fuscus mesoleucus* was hopping about on the roof; *Sayornis saya* flew in and out of the vacant parlors; *Junco annectens* rambled among the weeds in the garden; while *Sialia arctica* warbled its pleasing notes in the trees surrounding the house. Among the rocks behind the Arsenal, Juncos, Pipilos and Western Robins were seen. The Cañon Towhee frequents the back yards of the officers' quarters, and may be seen perched on the shed or fence, allowing one to pass within a few feet without taking flight. In the post garden I noticed a curious trick of the Mountain Bluebird. Toward dusk they repaired to a piece of plowed ground in search of their evening meal, hopping among the overturned sods in pursuit of insects or worms. Every few minutes some male would utter his spring song, then rising in the air would flutter in one spot about ten feet above the ground, moving its wings with great rapidity for a minute or two, when it would join its companions on the ground. In a bush near the garden I shot a beautiful male *Pipilo maculatus megalonyx*, and on the open plain a pair of *Rhynchophaenes mccowni*. A few birds were foraging among the refuse back of the corral. A number of flocks passing over saw them and alighted on the ground. These were joined by others until a space of several hundred feet was literally covered with them.

They all headed in one direction, feeding and constantly moving forward. A shot at long range brought down six or seven *Otocoris alpestris arenicola*, and only disturbed a few of those nearest. The vast army of hundreds of Horned Larks paid little attention to me as I picked up the dead ones. They moved on, surrounding me on all sides, the nearest being not more than a hundred feet off. They were twittering merrily, and now and then some bright plumaged male would indulge in a song, or engage in a set-to with some rival. Suddenly four strange birds, attracted by the moving troops of Larks, dropped among them, their black breasts easily distinguishing them from the others. They proved to be Chestnut-collared Buntings (*Calcarius ornatus*), and as each fell a number of the Larks shared its fate. No others were met with.

Fort Marcy, N. M., March 25. The post is surrounded by the old Mexican town of Santa Fé. Near the fort is a deep cañon with plenty of trees, and a tiny brook trickling among the rocks. A Horned Owl that I had not noticed sailed out of a big tree as I passed and was soon out of sight over the hill. Several *Myadestes townsendi* were perched on the tops of tall bushes at the entrance to the cañon. Three species of Junco were secured: *J. hyemalis*, *caniceps* and *annectens*. The only other birds observed were the Mountain Bluebird and Long-crested Jay (*Cyanocitta stelleri macrolopha*).

Whipple Barracks, Ariz., March 31. Elevation 6500 feet. One mile from Prescott. My host was Captain W. L. Carpenter, an ardent student of nature. This was the only point where inclement weather made collecting disagreeable. The snow was an inch deep and still falling when we went out among the rocky, pine-clad hills along the creek. Very few birds were seen. In a small tree a tiny bird was hopping among the branches, which proved to be Lucy's Warbler (*Helminthophila luciae*), an adult male. *Junco hyemalis thurberi* sought shelter from the storm in a scrub evergreen.

Fort Verde, Ariz., April 2. Elevation 4500 feet; forty-five miles from Whipple Barracks. Winter there, summer here. The clean sandy bottomland of the Verde River, with its abundant growth of huge cottonwood trees in full leaf, formed a paradise for birds, situated as it is among the moun-

tains at the mouth of the grand Copper Cañon. Numerous low sand-hills covered with bushes offered convenient shelter for little parties of Gambel's Quail, which were constantly flushed and ran ahead as I walked along the river bank. In the cottonwoods birds were as plentiful as in the woods of Illinois during the migration. *Dendroica aestiva sonorana* and *D. auduboni* were abundant. Several of the delicate little Lucy's Warblers were taken. Their peculiar song is easily recognized when once heard. Crimson-fronted House Finches, Vesper Sparrows, Western Chipping and Brewer's Sparrows, Lincoln's Finches and Cañon Towhees were on every hand. Black Pewees, Rough-winged Swallows, and White-throated Wrens were also secured. There being no grass, every bird shot fell on the clean sand and was easily found. The most striking bird of the Verde Valley is the Vermilion Flycatcher (*Pyrocephalus rubineus mexicanus*), its brilliant plumage and flaring crest being seen at quite a distance among the green foliage. A specimen of the Rock Wren was shot in the brush. *Pipilo aberti* lurked in the darkest bush clumps, his loud *chuck* leading to the capture of several specimens. *Amphispiza bilineata* frequented the weeds about the fences, as did the Arizona Goldfinches and Western White-crowned Sparrows. An hour or two in the morning would furnish all the birds I could prepare by midnight, and it was with great reluctance that I left this beautiful spot on the Verde.

On the way back to Whipple I found the nest and eggs of the Lead-colored Bush-Tit (*Psaltriparus plumbeus*) and shot the male bird. The nest, shaped like a purse, is eight inches long and three and three-quarters inches in diameter (a large structure for such a tiny bird), and was suspended from a bush four feet from the ground, close to the road. There is an opening about the size of a silver quarter on one side near the top. The walls of the nest are nearly an inch thick and very soft, covered with a wonderful collection of fine leaves, catkins, feathers, and tufted seeds, besides other materials difficult to describe, the whole presenting a beautiful example of bird architecture. The bottom is lined with a soft bed of downy feathers, on which reposed five pure white eggs, averaging .52 x .37 inches, and perfectly fresh. I believe this is the second description of the nesting of *Psaltri-*

parus plumbeus. (See Proc. U. S. Nat. Mus., 1887, p. 557, for first record.)

Fort Mojave, Ariz., April 6. Situated on the Colorado River, seventeen miles north of The Needles, in a desert with its thorn bearing mesquit and other bushes. The Mojave Apaches are camped about two miles above the post in the river bottom. They are peaceable and some of the officers hire them to act as 'strike' or servants in their houses. They wear no clothes except a piece of cloth around the loins. The women and older girls wear a short calico dress. Birds were not very plentiful. The place is one of the hottest in the United States, the thermometer ranging from 100° to 120° F. in the shade. *Auriparus flaviceps* had just completed its nest in a mesquit. Troops of *Zonotrichia leucophrys intermedia* were everywhere, and *Troglodytes aëdon aztecus* was not uncommon. A Curved-billed Thrasher (*Harporhynchus palmeri?*) was seen. Here again Lucy's Warblers, Brewer's Sparrows, and Cañon Towhees were taken, and on the road to The Needles I saw several of the black-crested *Phainopepla nitens*.

San Diego Barracks, Cal., April 12. In the southwestern corner of the United States, in the city of San Diego. A few birds were collected—*Amphispiza belli*, *Otocoris alpestris rubea*, *Zonotrichia leucophrys gambeli*, and *Tyrannus vociferus*. None of these were met with elsewhere.

Fort Lowell, Ariz., April 14. Nine miles from Tucson, where I had the pleasure of meeting Mr. Herbert Brown and inspecting his fine collection of Arizona birds. On the mesa, a barren waste between Fort Lowell and Tucson, is the favorite breeding place of Palmer's and Bendire's Thrashers. Their nests are placed in a cactus, each species seeming to select a different kind to build in. Specimens of each were taken: adults, half grown young of first brood, and fresh laid eggs. The full complement is three.

Dr. Elliott Coues gives an interesting account of the habits of the Thrashers inhabiting this particular locality in his 'Birds of the Colorado Valley.' The most abundant species noted was the Lark Bunting (*Calamospiza melanocorys*). These birds were on the ground in immense flocks, thousands I should judge, and were quite hard to approach. They kept running and flying

over each other, always keeping well ahead of me. Several were collected, but only a few in black plumage. At Fort Lowell the verandas of the officers' quarters are screened by rows of tall, thin cactus stalks which put out leaves in summer, making a compact wall. It is the custom to sleep out doors during most of the summer on the wide verandas, protected by this natural barrier.

Fort Huachuca, Ariz., April 18. The fort is at the mouth of a great cañon. Live oaks are growing everywhere in the post, and cottonwoods along the creek. The California Wood-pecker is the familiar bird about the trees in the officers' gardens. Brewer's Blackbirds, California Jays and White-necked Ravens are common. Found a Road-runner's nest and five eggs nearly ready to hatch in a live oak, about six feet from the ground. Along the creek I secured a pair of Green Towhees (*Pipilo chlorurus*), not elsewhere met with. Also several Vermilion Flycatchers, White-rumped Shrikes, Western Bewick's Wrens and Black-capped Flycatching Warblers, Cañon Towhees, House Finches, one *Ceryle alcyon*, and a number of Arizona Jays (*Aphelocoma sieberii arizonæ*), the last two in Tanner's Cañon. Huachuca is the only place where I saw the 'sand whirls,' a solid column of sand which is lifted from the earth to the sky by the wind, having the appearance of a water-spout, which the reader may remember seeing pictured in his old geography.

Fort Grant, Ariz., April 22. Grant is twenty-seven miles from Willcox, Ariz. A creek with cottonwoods and underbrush affords an inviting place for collecting specimens. A hundred feet either side was the desert, with its cacti extending as far as the eye could reach. The first bird shot was *Mimus polyglottos*. No others seen. The most abundant species is the Mourning Dove. This bird flew up at every step. Another common species, not seen elsewhere, was *Icterus cucullatus nelsoni*. It frequented the tops of the cottonwoods and came about the officers' quarters, showing very little fear of man. *Helminthophila celata lutescens*, one female taken; also *Vireo solitarius cassini*. In a low bush I found a nest of *Pipilo fuscus mesoleucus* containing three fresh eggs. Also in a cactus, a nest and five eggs of the Cactus Wren, which was quite common on the mesa. One

nest contained five dried up little Wrens and the dead body of the parent resting upon them. This Wren has a habit of standing on top of the nest (which is a bulky affair usually in plain sight), and attracting one's attention by her notes. In another cactus was the nest and six fresh eggs of the White-rumped Shrike. The Western Yellow and Audubon's Warblers were quite common. A single *Peucaea ruficeps boucardi* was shot.

Fort Thomas, Ariz., forty-five miles north of Grant, on the Gila River. I reached there after dark on the 25th of April. Early the next morning I was up and out. About half way across the parade ground was a solitary tree, which had the appearance of being loaded down with oranges. There was a tremendous chattering going on in that direction, sounding strangely familiar, but not until a dozen or more Yellow-headed Blackbirds dropped to the ground and began hopping about did I realize that the supposed oranges were the heads and throats of these handsome birds. Going into the house I got Lieut. R. D. Read to take a shot at them. He had to fire at long range. Thirteen were killed about the tree, and as the great flock rose and flew toward the corral several more were seen to drop; and the tree—it was a dead one, with not a single leaf on it. It was the custom of hundreds of these birds to perch in this tree every morning about sunrise and utter their loud notes. Around the corral the Brewer's Blackbirds were seen in large numbers and as tame as barn yard fowls. The same afternoon I went up the river thirty-three miles in a buckboard to

San Carlos, Ariz., one hundred and five miles from the railroad. On both sides of the river the San Carlos Apaches have their 'wickiups' or brush huts. There are thousands of these Indians and though generally peaceable, a number of renegades were out at this time, so that bird collecting was dangerous to attempt. At San Carlos the troops live in tents covered with brush (thermometer 100° to 120° in the shade). At sundown thousands of Yellow-headed Blackbirds came into camp and roosted on the brush on top of the tents. They were very tame here and seemed to know that no shooting was allowed. Saw many Road-runners in the brush along the road, and near Fort Grant shot a pair of Blue Quail (*Callipepla squamata*), a bird that frequented the desert where Cactus was the only vegetation.

Fort Davis, Texas, May 1. The fort is prettily located at the foot of some giant boulders that seem to have been thrown in a heap some two hundred feet high. Panthers, Mexicans, goats and Rock Wrens are about the only living things in the rocks. In hunting for one of the latter I got close enough to one of the former to see his glaring eyes in a dark cavern in the rocks. Here I was reminded that I was nearing my native hunting grounds by finding *Helmitherus vermivorus*, *Anthus pensylvanicus*, and *Chelidon erythrogaster*, and added to my collection specimens of *Speotyto cunicularia hypogaea*, *Passerina amœna*, *Sphyrapicus varius nuchalis*, *Pyranga rubra cooperi*, and *Salpinctes obsoletus*.

Fort Clark, Texas, April 5. Ten miles north of Spofford Junction. Luxuriant growth of large and small trees, bushes and peculiar plants. One of the typical birds of this place is the Nonpareil (*Passerina ciris*). It sings from the top of a bush in the open woods. Cardinals, Lark Finches, Mockingbirds, Cooper's Tanager and other species were abundant. Capt. Vinton, of the post, told me of his seeing a flock of green Parrots with yellow heads at Fort Gibson, Ind. Terr., in 1886. They lit in a grove near the post and staid fully twenty minutes. No shot gun being handy they were not molested.

Stopped long enough in San Antonio, Texas, to see the principal streets. Noticed *Chondestes grammacus strigata* hopping about under the horses and wagons like 'our own' English Sparrow. A little out of the city saw several *Milvulus fasciatus* on the telegraph wires, and at the rifle range ten miles out, they were flying about over the shooters' heads.

After a very pleasant trip, briefly outlined above, I reached Chicago May 10, to find it chilly and raining. The migration being late I had the pleasure of collecting a nice series of desirable birds during the month, among them *Turdus fuscescens salicicola* at RAVENIA, Lake Co., Ill.

Here the writer would express his gratitude and appreciation of the many courtesies extended by the officers of the Army with whom he came in contact, having been taken into their homes and treated like a brother, although a comparative stranger to most of them.

NOTES ON CERTAIN WATER BIRDS IN MASSACHUSETTS.

BY GEORGE H. MACKAY.

THE entire month of March was unusually mild and warm, without storms, southwest and west winds generally prevailing. I do not remember ever having experienced a similar one. I passed through Vineyard Sound on my way to Nantucket Island, Mass., on March 9, 1894; also on my return on the 20th of the same month. On the 28th of April I again made the trip, returning on May 5. I saw but few sea fowl of any description. I was on Muskeget Island, Mass., March 11, remaining until the 18th. Prior to my arrival there had been about two hundred American Eiders (*Somateria dresseri*) living between Muskeget and Tuckernuck Islands, half of which had been killed, and a portion of the remainder driven away, before I arrived. Of these two hundred birds, three quarters were males. This number is less than were sojourning here last year and is undoubtedly owing to the scarcity of shell-fish food in this particular locality. The few birds which remained after my arrival apparently departed on the 16th of March.

During the latter part of February, 1894, about two thousand American Eiders had been living around Cape Poge, Martha's Vineyard, and what is new in my experience, large numbers of them frequented daily the Great Pond on Chappaquidic Island, M. V., to feed. They had undoubtedly observed the large numbers of Sooters which also frequented this pond to feed and followed their example. It may be interesting to know, in this connection, that those Eiders frequenting the north side of Nantucket, also for the first time in numbers, came into the harbor of Nantucket to feed. The cause in both instances was undoubtedly the better food supply. At Woods Hole, Mass., Mr. Vinal Edwards informed me that the American Eiders had again appeared in 1894, as in 1893, in very large numbers during the latter part of the winter, his estimate of their number being between four and five thousand birds, which daily frequented the

waters between Woods Holl and Naushon Island, Mass. On March 13, 1894, during a strong southwest wind, they all departed and were not observed afterwards. Mr. Edwards had saved the contents of the stomachs of some Eiders which were shot on February 11 and 15, which I saw; they consisted of sculpin spawn, in perfect condition, in small masses stuck together, and black mussels (*Modiola modiolus*) ground up to the consistency of fine sand and black in color. Four female King Eiders (*S. spectabilis*) were taken there on February 20, 1894, and the contents of the stomachs saved, which I also saw, consisted entirely of *Tritea trivittata* in good quantity and condition.

Such a very large collection of Eiders, in so restricted a locality as the one above mentioned, can only be explained by the great abundance of the black mussel which these birds first discovered in the winter of 1892-93. These beds of mussels had increased to such an enormous extent that some of them, which were attached one to another, are said to be five feet or more in thickness. Only such masses are able to survive under the peculiar conditions which exist there, due to the great pressure of water which rushes with great force through this narrow passage or strait, connecting Buzzards Bay with Vineyard Sound. When the birds were disturbed by the steamboats which passed daily they would fly out into the Sound, where they would remain awhile, returning later. Although considerably harassed, and many shot, it apparently produced little effect on them, for they refused to forsake so attractive a feeding ground, and continued to frequent it. I have little doubt that they will again appear in the same large numbers if the food supply continues in this locality next season.

No Brant (*Branta bernicla*) wintered around Muskeget Island during the winter of 1893-94. The first that were noted were five birds on February 15, 1894. In less than one week the number increased to fifty, and on March 12 there were between four and five hundred, the larger half of which had come in since March 8. I noticed considerable diminution in the food supply, many acres of the eel grass (*Zostera marina*) having been killed. There was still remaining large areas that was good.

Mr. Marcus W. Dunham of Tuckernuck Island informed me that on May 2, 1893, he saw a good many Red Phalaropes (*Crymophilus fulicarius*) between Muskeget and Tuckernuck Islands.

There have been a good many of the larger Scaup (*Aythya marila nearctica*) living about the waters between Muskeget Island, and Maddeket harbor, which is on the northern side of Nantucket Island. They also frequented the ponds at the western part of the latter island during the winter and spring of 1894, although there have been fewer there than there were last season during the same period. On March 11, 1894, some four hundred still frequented Maddeket harbor. I shot a male and female *A. affinis*, all I saw, on the 13th. They were in company with *A. m. nearctica*. There were still thirty of the larger variety in the Hummock Pond, Nantucket Island, on April 29. They flew out at my approach, mounted to a very high altitude and went towards the west. I did not see them again.

Although I have shown by these notes that there have been very large bodies of wild fowl concentrated in restricted localities, I would add that I have rarely observed fewer in the localities they have heretofore been accustomed to haunt. I account for it by the scarcity in these localities of the shell-fish food, which they consume in enormous quantities.

I saw about twenty-five Red-breasted Mergansers (*Merganser serrator*) at Muskeget Island March 15, 1894. The height of their abundance in these waters is from April 1 to 10. Those birds which winter further south first make their appearance, a few, about the first of March; they are about all gone by the first week in May.

Six Sanderlings (*Calidris arenaria*) have been living in the vicinity of Muskeget Island, Mass., during the past winter.

Nantucket, winter of 1893-94. There have been about one thousand Scoters living in the upper harbor, coming in from the Sound in the morning to feed, and flying out again in the afternoon to roost. There have also been about one hundred and fifty Brant living in the harbor this spring. On May 1 there were about thirty Brant in Muskeget waters.

Mr. Marcus W. Dunham of Tuckernuck informs me that on May 2, 1893, he saw a flock of fifteen (*Charadrius squatarola*),

the first birds of the season, which were resting on Gravelly Island flats. On May 18 or 20 one hundred or more had collected on Tuckernuck Island and vicinity. They remained about one week. On April 18, 1894, at the westernmost part of Nantucket Island, seven birds were noted flying towards the west. On April 29 I saw two at the south head of the Hummuck Pond. One of them, a male, which I shot, was pretty evenly black and white on the breast; the other had apparently no black. On April 29, 1894, at Billingsgate Lighthouse, Welfleet, Cape Cod, Mass., the keeper, Mr. James P. Smith, saw two Black-bellied Plovers. These are *all* very early dates for spring birds in Massachusetts.

There were fewer Turnstones (*Arenaria interpres*) during the spring of 1893 than in 1892; they arrived at the same time as the Black-bellied Plovers, just as they did in the spring of 1892. They are close friends, and frequent the upland with the Plovers, as they do also by themselves.

Mr. H. G. Nutter of Boston, Mass., informs me that on April 15, 1894, he saw seven flocks of American Eiders off Welfleet, Cape Cod, Mass. There were five to seven in each flock. On the 20th he also saw three flocks, with three to five birds each. On April 18 he saw two flocks of Canada Geese (*Branta canadensis*), one had twelve birds, the other rather more; they were flying in a northwest direction. On the 21st he saw one flock containing eight birds, which appeared to be very tired. They settled down in Welfleet harbor to rest, it being late in the afternoon.

Seven Canada Geese (*Branta canadensis*) alighted in Ponkapog Pond, Mass., May 8, 1894. I am informed on good authority that more Canada Geese have passed over the eastern part of this State this spring than for many years. This is also the case for Nantucket Island.

There have been fewer Golden-eyes (*Glaucionetta clangula americana*) about Nantucket Island during the past winter than usual.

Through the courtesy of my friend Mr. J. R. Kendall of Jamaica Plain, Mass., I am able to contribute the following interesting data concerning the recent occurrence of the Red Phalarope (*Phalaropus lobatus*) off the coast of Massachusetts. On May 25, 1894, about ten thousand (as carefully estimated)

were observed resting on the water around the 'Pigs' (rocks, lying off Swampscott), occupying an area of about a mile radius. They were feeding on the red whale bait (brit) some of which was taken from them. I am informed that these birds follow the mackerel, which also feed on this brit, by their pursuit of which it is driven to the surface, and is then obtainable by the birds. I am also told that in the Bay of Fundy the Phalaropes so frighten the mackerel when they come to the surface in pursuit of the brit, that the fish sink themselves. To prevent this, the fishermen carry at times quantities of liver cut up, which they throw out to attract these birds and keep them away from the fish in order that they may be better able to capture the latter.

On the above date three hundred and eleven were shot off the 'Pigs,' fifty-six of which were obtained as the result of two discharges. Six of these birds were forwarded to Mr. Tufts, Lynn, Mass., and six others to Mr. Welch of Salem, Mass., both taxidermists. The remainder were not preserved. All of those sent to the above gentlemen proved to be Northern Phalaropes, and were all females. There is every reason for believing that this entire body of birds were of this species. This gathering of birds appears to have been the largest ever noted in this vicinity. I understand they were also observed in large numbers at Annisquam at about the same time.

On May 30, with the wind south and fresh, my friend Mr. J. R. Kendall observed two thousand (estimated) around the 'Pigs,' where they were still lingering, the others having departed. They kept up a continual twittering. He again visited the same locality on June 3, at my request, and sailed over the adjacent water, but failed to observe any birds, all having apparently departed. On that day the wind was west, a fresh breeze. The day before the wind was strong southwest.

I am inclined to the belief that *Phalaropus lobatus*, as also *Crymophilus fulicarius*, exist in enormous numbers, owing to the fact that they seldom approach the shores in numbers, or pass over the land to any extent, as far as I am aware, during their migrations. They consequently are not subject to the contingencies which affect other birds. It will be recalled that a very large flight of Red Phalaropes (see Auk, Vol. IX,

1892, pp. 294-298) occurred in 1892, greater in fact than had heretofore been recorded. None similar has taken place since, so far as I know. Yet one hundred miles north of Cape Hatteras, N. C., and fifty miles from land, Phalaropes abound in countless myriads in May.

STATEN ISLAND CROWS AND THEIR ROOSTS.

BY WILLIAM T. DAVIS.

ABLE-BODIED Crows do not roost on Staten Island in winter, but fly as night approaches to better protected retreats in New Jersey. In ordinary winters five or six hundred visit the island daily, and generally repair to the South Beach where they find a considerable store of food, in the fish, crabs, and other dead creatures that are cast ashore. As the afternoon wears away, the Crows fly westerly from the beach, and congregate on the salt meadows along Fresh Kill, on the opposite side of the island. If these meadows are covered with snow, they assemble in the trees, or in some upland field, which is more likely to be bare. Here, with additions to their number from other parts of the island, they hold a convention, and gradually, by twos and by threes, and in small flocks, fly either along the Kill out to the Sound, or diagonally across Long Neck to New Jersey, to a roost that lies north or northwest of Staten Island.

Many afternoons have been spent in watching the Crows at Long Neck and elsewhere on the island, and a few specific observations will be offered as evidence here, though a more detailed account is to be found in the Proceedings of the Natural Science Association of Staten Island, for May 12, 1894.

Sunday, December 24, and Christmas day, 1893, were both very mild; there was a warm wind and no snow on the ground. On these occasions several hundred Crows gathered on the salt meadows in the afternoon, near the head of the main branch of

the Fresh Kill. On the 24th it was cloudy and showered occasionally and the Crows commenced flying to New Jersey at 3 p. m. The 25th, on the contrary, was a bright sunny day, and the first Crows did not start until 3.30 p. m. On this last occasion I counted 303 Crows flying over at right angles to the Turnpike and thence over Chelsea and Dongan Island, like a long straggling caravan following an aerial highway.

They do not take exactly the same path always; occasionally some follow the Kill, as has been stated above, and those that fly across the Neck are governed considerably by the direction of the wind. One blustery day in February Mr. Walter Granger and I watched the first Crows fly over the Neck, drop close to the fields in order to avoid the force of the north wind, and finally fly along Chelsea Creek to New Jersey. The birds that followed flew by a more circuituous route, keeping among the scattered timber and thus avoiding the full strength of the gale.

Again, all of the Crows that fly westward from the beach do not cross Long Neck or follow the Kill to the roost situated north or northwest of the island, but a few continue along the high ground from Annadale to Kreischerville, and are apparently bound for a roost that lies beyond the Raritan. On calm days they may be watched for miles with a glass, as they fly sky high on their journey.

In the severe winter of 1892-93, Crows not only came from the New Jersey roosts already mentioned, but they also came to the South Beach from the roost at Sandy Hook. They went long distances for food and no doubt many died. Mr. Robert Ridgway, in 'Science' for February 10, 1893, tells of the sufferings of the Crows in a roost near Washington, D. C., stating that many had their eyes frozen, which was followed by the bursting of the organs and the death of the birds from starvation.

On the afternoon of the 22d of January, 1893, many Crows were noticed near the foot of New Drop lane. Some of these birds flew westward in the direction of Fresh Kill, while several hundred flew over the water to Sandy Hook. The chief departure was about 4 p. m. At fifteen minutes past four they had nearly all gone, but I observed a few belated individuals fly boldly from the Staten Island shore near the light house, without any rest previous to undertaking their long journey. Thus many

of the Crows that were walking together on the beach flew in opposite directions as the afternoon wore away, and roosted in widely separated parts of New Jersey.

The Rev. Samuel Lockwood, writing of the evergreen groves on Sandy Hook, in the 'American Naturalist' for August, 1892, says: "Here are rookeries of crows which almost blacken the air as they return in the evening from their daily foraging." As far as my observation extends it is only in very cold weather that they continue their flight to Staten Island and its store of food on the South Beach.

In spring the Crows return to the island to roost, and mostly fly at evening in two directions, namely, toward Old Place on the North Shore, and toward the woods at Annadale. Of course many build nests and live for a time apart, but as early as April and May, flocks of Crows that have no family cares may be seen at evening about these warm weather roosts and as the season advances the numbers are greatly increased.

At Old Place there is a long ridge of slightly elevated land in the salt meadow, on which stands a thick growth of deciduous trees, and it is in these and in the immediate vicinity that the Crows have the smaller of their warm weather roosts. I have seen them congregate at this place in the late afternoons every summer since 1889, chiefly in a large, dead tree that towers above the surrounding growth, which tree is also used by the Bitterns that occupy the same woods during the day and sally forth on their nightly fishing excursions about the time the Crows come home to roost.

The majority of the Crows that frequent the island in warm weather may be seen flying in late afternoon toward the Annadale woods. They come from the beach, and from all directions, and congregate in the broad open fields near the woods where they have had a warm weather roost for many years. On August 6, 1893, a flock, by count, of over three hundred Crows had gathered in these fields, and many more were in the woods near by, and others constantly arriving. At dusk the Crows in the field flew to the woods. All of them did not roost in a few trees close together, but were scattered about the vicinity in small assemblages.

On the 27th of November, 1892, I found only a small flock of about forty Crows remaining in the Annadale roost. At dusk

they were making considerable noise, uttering a variety of strange notes, many of which were subdued and conversational. When it was quite dark I crept on hands and knees into the woods, which consisted mainly of young oaks, to within about forty feet of the Crows, when suddenly one sounded an alarm, and the others flew from the low trees without uttering a sound. They lit only a few yards away, but scattered in their flight, and the Crow who did the cawing lit in the next tree from that used as a roost.

The Annadale woods was visited on the 11th of December, 1892, and on the 23d of December, 1893, for the purpose of observing whether the Crows frequented them at that season, but though a few flew by, all were found to be on their way to New Jersey.

It will be seen from the above that Crows visit Staten Island in winter from two, and sometimes in severe seasons, from a third New Jersey roost, and that in summer they occupy principally two warm weather roosts on the island itself.

THE DISTRIBUTION OF GENERA AND SPECIES
OF NON-MIGRATORY LAND BIRDS
IN THE PHILIPPINES.¹

BY J. B. STEERE.

IN THE years 1887 and 1888 a party from the University of Michigan visited the Philippines for the purpose of scientific exploration. During this visit several important facts relating to the distribution of birds in these islands were noticed. As one island after another was explored, it was found, as was to be expected, that most of the genera of birds were continually recurring, thus giving a general similarity to the bird fauna of all the islands.

¹ Read before the American Association for the Advancement of Science at Indianapolis, August, 1890.

Each genus was ordinarily represented by but a single species in a place, so that the number of species and the number of genera in any one locality were nearly equal. This resulted from the fact that in a large number of genera the islands possessed but a single widely distributed species of each, and that in a large number of other genera, though each genus existed in the islands in several species, each of these species occupied a limited area of its own made up of one or more adjacent islands. In this limited area it existed by itself, sharply separated from the other species of the same genus.

This reappearance of genera in new specific forms in each distinct area was so frequent with a large number of them that the members of the party learned to expect and to look for local species of these whenever a new island was reached.

On making a study of the distribution of the genera and species of birds collected by the party in these islands on our return to the United States, the facts above noticed were found to be further reaching and of more importance than was at first supposed, and to point to a law of distribution which, if established, must have great influence upon the theories for the creation of species.

In this study only the collections made by the members of the party have been used. Great care was taken with these in noting the exact place of collection, sex, color of eyes, etc., while with many collections formerly made from the islands it was supposed sufficient to label them as from the Philippines.

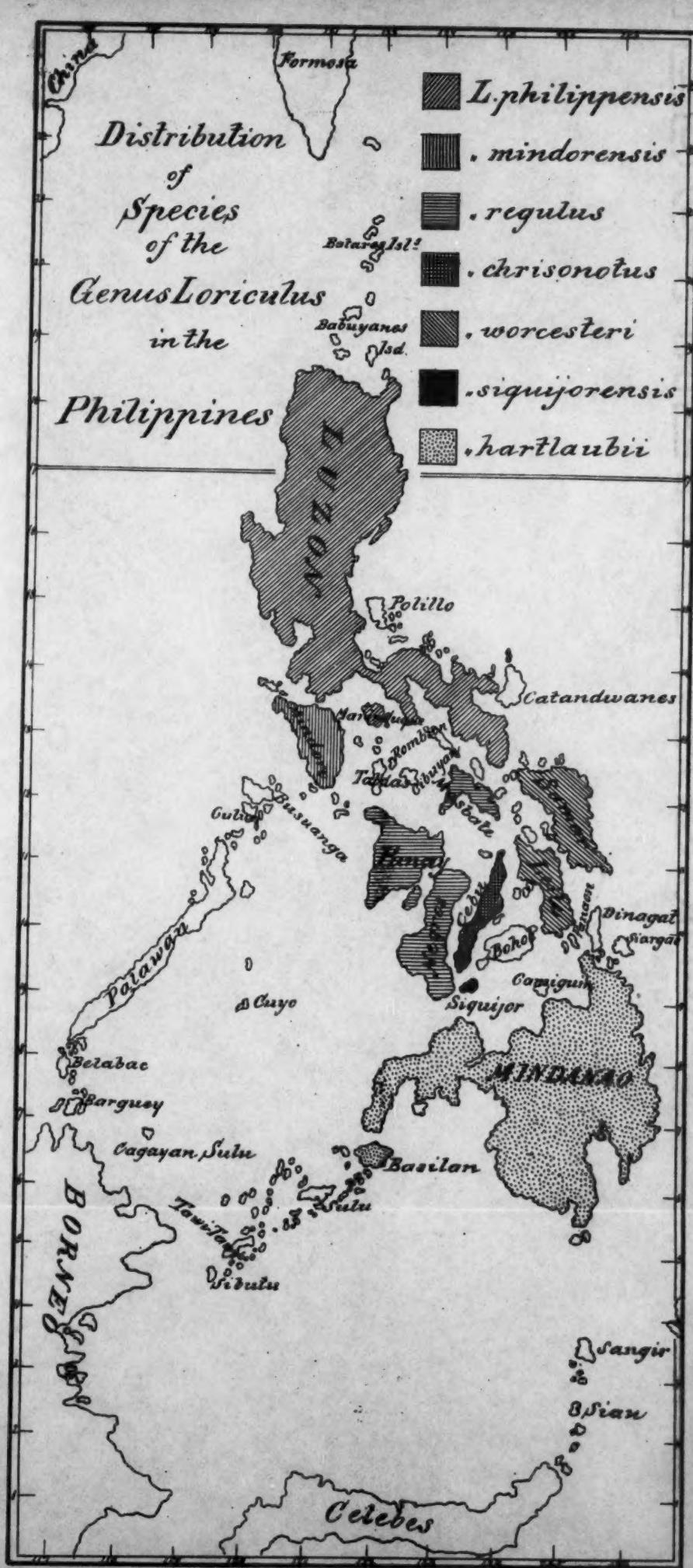
About five thousand specimens of birds were collected by the party, belonging to nearly or quite four hundred species. These were collected on seventeen distinct islands of the group, which were chosen from their size and location as representative of the whole.

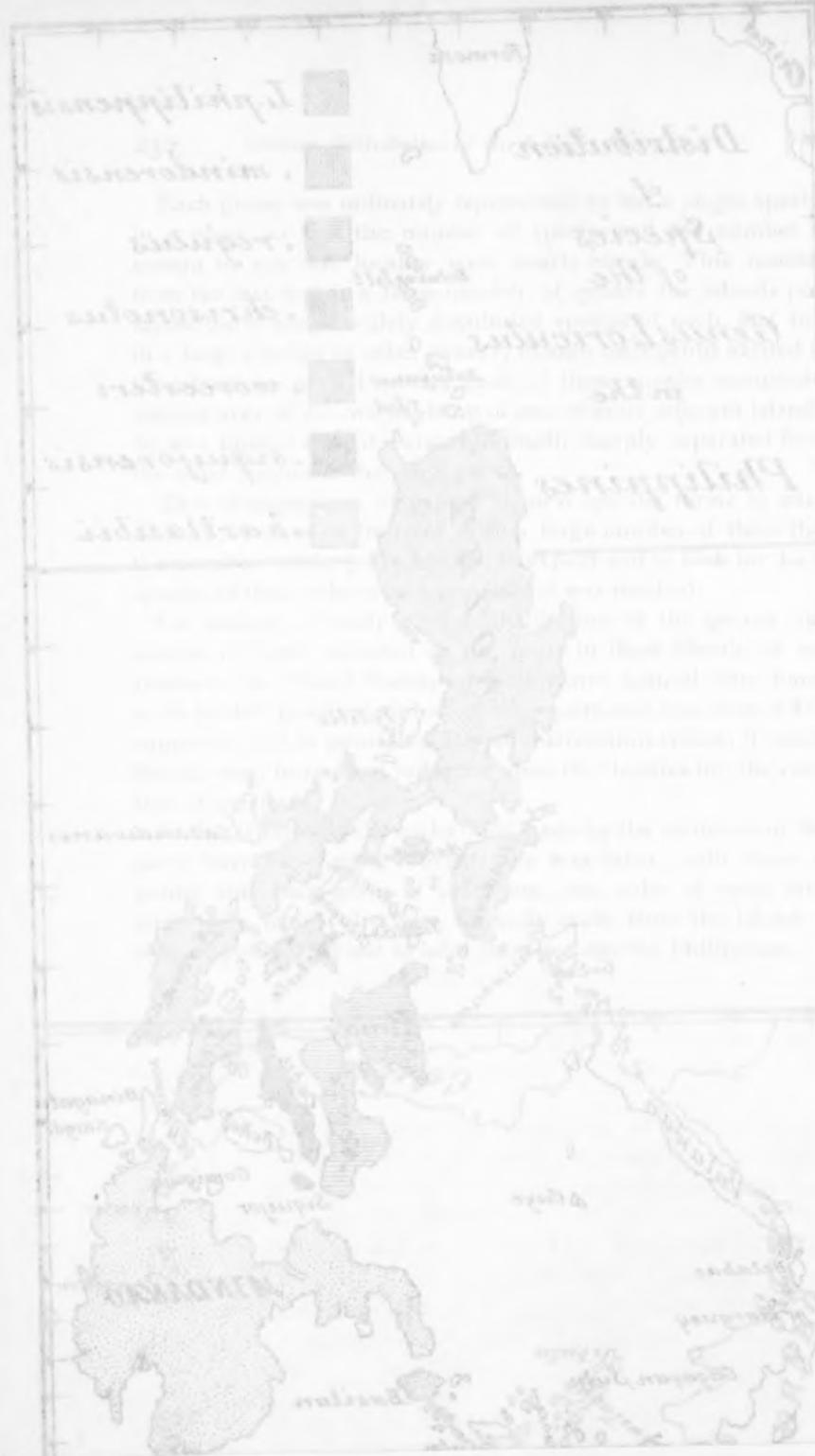
These collections, while not comprising all species known from the islands, are so nearly complete that any just conclusion drawn from their study must be accepted as truth, which further exploration will only strengthen.

The general arrangement followed has been that of Lord Walden and of Prof. R. B. Sharpe, in their published lists of Philippine birds. The names of genera and species have been made to agree generally with those given in the 'Catalogue of

Distribution of Species of the Genus *Loriculus* in the Philippines

- L. philippensis*
- L. mindorensis*
- L. regulus*
- L. chrysotus*
- L. worcesteri*
- L. siquijorensis*





the Birds of the British Museum,' as far as the volumes of that work had been issued when this paper was first prepared.

The land birds of the Philippines collected by the expedition, as far as identified, belong to one hundred and fifty-six genera, and number three hundred and twenty-four species.

Of these, six genera (List A), — *Lanius*, *Motacilla*, *Anthus*, *Locustella*, *Acrocephalus*, and *Phylloscopus*, — with twelve species, are migratory as regards part or all of their species found in the Philippines, and have been left out of the study, though the non-migratory species of these seem to be distributed according to the same law governing the other resident birds.

There are left one hundred and fifty genera and three hundred and twelve species of resident land birds. Of these, seventy-five genera were found represented in the Philippines by single species each. These are as follows:—

LIST B.

Cacatua	Chrysococcyx	Copsychus
Accipiter	Hierococcyx	Climacteris
Lophotriorchis	Dasylophus	Chalcostetha
Spizaëtus	Lepidogrammus	Corone
Pernis	Pyrrhocentor	Acridotheres
Butastur	Dryococcyx	Calornis
Haliaëtus	Anthracoceros	Sturnia
Haliastur	Artamus	Sarcops
Elanus	Lalage	Gracula
Microhierax	Buchanga	Padda
Pandion	Muscicapa	Mirafra
Polyoëtus	Rhipidura	Passer
Bubo	Eumyas	Treron
Scops	Culicicapa	Carpophaga
Strix	Pratincola	Myristicivora
Tiga	Abrornis	Ptilocolpa
Harpactes	Cryptolopha	Hemiphaga
Eurystomus	Xanthopygia	Ianthœnas
Alcedo	Dasyctopha	Chalcophaps
Macropteryx	Dendrobiastes	Calœnas
Chætura	Ægithina	Geopelia
Batrachostomus	Micropus	Gallus
Lyncornis	Merula	Megapodius
Cacomantis	Monticola	Excalfactoria
Chalcococcyx	Geocichla	Turnix

These are, to a great extent, large and long-winged species of Hawks, Owls, Cuckoos, Starlings, Pigeons, etc., which may pass readily from island to island; a number being extended over the whole archipelago, and some species reaching the adjacent countries. A few of them are Bornean genera, apparently lately introduced into Paragua, which have not had time to become more widely distributed through the archipelago, and in some cases have hardly as yet formed distinct species. Examples of these are *Pernis*, *Tiga*, *Buchanga*, *Ægithina*, and *Gracula*. A few are Philippine genera, differentiated as yet into single species only, or having formerly existed in more species they have been reduced to their present state by the great changes of area and other conditions to which the islands are subject. Such are the genera of Cuckoos, *Lepidogrammus*, *Dasylophus*, and *Dryococcyx*, the Starling *Sarcops*, and the curious Timeline form *Dasycrotopha*. It is probable that a few genera of this list, among them *Scops*, *Batrachostomus*, and *Megapodius*, will be found to have more than one species in the islands. In this case they will fall into List C, and will in no sense weaken the conclusions of this paper.

In fifty-three genera, with one hundred and fifty-three species, each genus is represented in the Philippines by two or more species, each of which exists in a limited area of its own, sharply separated by sea channels from the similar areas occupied by the other species of the same genus.

These genera, with the number of species of each found occurring in the archipelago, are as follows:—

LIST C.

Prioniturus, 4.	Xantholæma, 2.	Hyloterpe, 4.
Cyclopsitta, 2.	Caprimulgus, 2.	Pericrocotus, 2.
Loriculus, 7.	Surniculus, 2.	Dicrurus, 4.
Spilornis, 3.	Eudynamis, 2.	Siphia, 2.
Falco, 2.	Centrococcyx, 3.	Philentoma, 2.
Thripornax, 4.	Buceros, 3.	Zeocephus, 3.
Mulleripicus, 3.	Craniorrhinus, 2.	Setaria, 2.
Chrysocolaptes, 5.	Penelopides, 6.	Broderipus, 2.
Yungipicus, 4.	Artamides, 5.	Oriolus, 4.
Pelargopsis, 2.	Edoliisoma, 3.	Erythropitta, 2.
Actenoides, 3.	Pseudolalage, 2.	Macronus, 2.

Mixornis, 3.	Parus, 2.	Corvus, 2.
Ptilocichla, 3.	Sitta, 2.	Sarcophanops, 2.
Chloropsis, 2.	Zosterops, 4.	Oxycerca, 3.
Irena, 4.	Prionochilus, 3.	Munia, 2.
Poliolophus, 4.	Æthopyga, 4.	Macropygia, 2.
Pycnonotus, 2.	Arachnothera, 2.	Phlogænas, 2.
Cittocincla, 3.	Anthocephetes, 2.	

Future observations will probably remove *Falco* from this list to the one which follows. Professor Sharpe does not recognize the genus *Broderipus* in the Oriolidae, nor the genus *Actenoides* among the Kingfishers. If these genera are thrown out the species placed under them will also fall into the following list. Several of these genera, among which are *Caprimulgus*, *Surniculus*, *Eudynamis*, *Erythropitta*, *Pycnonotus*, *Parus*, and *Sitta*, possess but two Philippine species each, one of which inhabits the islands of Paragua and Balabac on the west, while the other species is quite generally distributed over the remaining islands.

Perhaps one of the most characteristic genera of List C is *Loriculus*, the small, green, blue-winged and red-rumped Parrots. This genus exists in seven species, which have the following distribution: *L. philippensis* occupies the islands of Luzon and Marinduque; *L. regulus* the islands of Panay, Guimaras, Negros and Masbate; *L. mindorensis* the island of Mindoro; *L. chrisnotus* the island of Cebu; *L. worcesteri* the islands of Samar and Leyte; *L. siquijorensis* the little island of Siquijor; and *L. hartlaubii* the islands of Mindanao and Basilan. The western islands or Paragua and Balabac seem to lack the genus altogether. Though some hundred and fifty specimens of this genus were procured, in no case were individuals of two species found inhabiting the same island, though the straits separating islands were in some cases very narrow. This is notably so with the islands of Negros and Cebu, occupied respectively by *L. regulus* and *L. chrisnotus*. These islands approach each other so closely at the straits of Dumaguete that the outlines of houses and trees can be readily made out across them.

The genus of small Hornbills, *Penelopides*, with six species, is another good example of the method of distribution of species in this list. *Penelopides panini* inhabits Guimaras, Panay,

Negros, and Masbate; *P. manillæ*, Luzon and Marinduque; *P. affinis*, Mindanao; *P. basilanica*, Basilan; *P. samarensis*, Samar and Leyte; and *P. mindorensis* the island of Mindoro. The western islands seem to lack this genus also.

In seventeen genera, with seventy-four species, each genus is represented in the islands by several species: two or more of which may be found inhabiting the same island; but the species thus found together, with the same generic name, differ greatly in size or coloring or other structures and belong to different natural sections or subgenera.

These sections or subgenera themselves may each be represented in the archipelago by several species; but where this occurs each species is found isolated and separated from all the other species of the same subgenus, just as are the species of the genera given in List C. These genera, with the number of species of each, are the following:—

LIST D.

<i>Astur</i> , 2.	<i>Hypothymis</i> , 4.	<i>Cinnyris</i> , 7.
<i>Ninox</i> , 4.	<i>Cyanomyias</i> , 2.	<i>Ptilopus</i> , 3.
<i>Merops</i> , 2.	<i>Hirundo</i> , 3.	<i>Phabotreron</i> , 6.
<i>Ceyx</i> , 6.	<i>Iole</i> , 6.	<i>Osmotreron</i> , 2.
<i>Halcyon</i> , 5.	<i>Orthotomus</i> , 8.	<i>Turtur</i> , 2.
<i>Collocalia</i> , 2.	<i>Dicæum</i> , 10.	

Authors have already attempted in several cases to raise the natural sections of these genera to generic rank.

Whenever the birds of two sections of one of the genera named above differ greatly in size, the species of the section of larger, longer-winged birds will be more widely distributed than the smaller birds of the other; one of the larger species being able to extend itself over the areas of several of the smaller forms. The genus *Ninox* is an example of this. *Ninox lugubris*, a large, long-winged, long-tailed form, seems to be distributed over the whole archipelago, while the other section of smaller, short-tailed birds, of which *Ninox philippensis* is an example, contains at least three species,—one found in the south, one in the central islands and the other in Luzon. The genus of Ground Pigeons, *Phabotreron*, is another example of this method of dis-

tribution, the larger, *Phabotreron amethystina*, apparently extending over the areas of the other five smaller species.

The distinct conditions under which these subgenera exist together were frequently apparent even in our hurried visit. The species of Bee-birds, *Merops*, were quite closely observed. The two species, *M. bicolor* and *M. philippinus*, probably exist together on every island of the group. *M. bicolor* is social, hundreds sometimes feeding together, in groves and forests, at a height of fifty to a hundred or more feet from the ground. They appear to be closely limited to honey bees as food. They were found nesting semi-socially in dry, nearly level ground, into which they burrowed several feet. This was in the island of Marinduque in May, 1888. *M. philippinus* is solitary in habit and feeds near the ground in open country, where it perches on posts and on bushes. Its food, as far as observed, was wasps and dragon-flies. It was not observed nesting.

The species of the genus *Ceyx* were found to vary greatly in their habitat. There were the woodland Ceyxes, *Ceyx melanura* and its allies, always found away from the streams and in the forests, and the river Ceyxes, *C. cyanopectus* and *C. argentata*, as universally found along the streams.

Three species, of three subgenera, of so-called *Halcyon* were found generally distributed over the islands together. These were *H. gularis* (Entomobia); *H. coromanda* (Callialcyon); and *H. chloris* (Sauropatis). None of these frequented the water; *H. gularis* being found in open plains feeding from the ground, or perched in low trees; *H. coromanda* in low, thick undergrowth in forests, and *H. chloris* quite generally near the sea beach and often in open coco groves about the coast villages.

The maroon-backed *Osmotreron* is arboreal, feeding in the high trees in flocks. *Osmotreron vernans*, on the other hand, inhabits thickets, where it feeds from the bushes or the ground, and is found singly or in pairs.

There remain five genera and ten species in which two species of the same genus were found existing together in the same islands, these not differing enough to appear to warrant placing them in distinct sections of the genus.

These genera, with the number of species of each found in the islands, are the following:—

LIST E.

Melanopitta, 2.
Criniger, 2.

Megalurus, 2.
Cisticola, 2.

Tanygnathus, 2.

Even here there seems to be no case in which the two species of the same genus found existing together are so closely allied that they may be supposed to have been derived from a common form in the area in which they now occur. They usually differ considerably in size or coloring, and in the case of *Cisticola* and *Megalurus*, the only genera in which both of a pair of species were observed, there was a sharp distinction of habitat noticed. *Cisticola exilis* inhabited the low, open, level rice fields of Luzon, and *Cisticola cisticola* the wooded hills. *Megalurus ruficeps*, where it occurred with *M. palustris*, was found in the waste places inland, which had grown up to high, coarse grass, while *M. palustris* was found close along the beach in open grassy places.

The relative abundance of the two species is worth noting in the case of *Melanopitta* and *Tanygnathus*. *Melanopitta sordidus* is the common form found everywhere and always abundant, while of *M. steerii* our party found but one specimen in Mindanao in a six weeks' stay, and another in Samar. *Tanygnathus luconensis* again is the common form found everywhere abundantly, while but a single specimen of *T. everetti* was ever seen. Our collections seem to show that *Melanopitta sordida* occurs alone through most of the islands, but with *M. steerii* in Mindanao and Samar; also that the large *Megalurus palustris* alone occupies the northern and western islands, the smaller species, *M. ruficeps*, the central islands, while the two species inhabit Marinduque together.

It seems probable that *Melanopitta* and *Tanygnathus* are examples where two species of a genus, after having arisen in different areas, have then been thrown together after they have just come to differ too much to fuse, while they still remain almost identical in habits and foods, and so are brought into such conflict that the weaker species is disappearing.

Putting Lists B and C together, there are one hundred and twenty-eight genera out of one hundred and fifty, and two hundred and twenty-eight species out of three hundred and

twelve, in which each genus is represented by but a single species in a place. This is about thirteen-fifteenths of the whole number of genera and five-sevenths of the whole number of species; altogether too great a proportion of both to have no significance.

If we add to Lists B and C List D, there results one hundred and forty-five genera out of one hundred and fifty, and three hundred and two species out of three hundred and twelve, or twenty-nine from every thirty of the genera and over thirty from every thirty-one of the species so distributed in the islands that no two species nearly enough allied to be put in the same section or subgenus are found existing in the same island. These three lists teach the same law of distribution, and the difficulty in formulating it is not in the facts but in the necessary imperfection of the terms used in measuring the values of the various natural groups of animals. The fact that these natural groups vary in value indefinitely makes it forever impossible to so measure them by the fixed rule of species and genus that all men shall be agreed.

The law of distribution of non-migratory land birds of the Philippines may be stated as follows:—

The genus is represented by but a single species in a place.
Or, in more general terms, as follows:—

No two species near enough alike structurally to be adapted to the same conditions will occupy the same area.

The varieties or subspecies of birds in the Philippines, wherever observed, follow the same law of distribution as the species; the varieties of a species, if any, each existing in neighboring but distinct areas. The great Bronzed Pigeon, *Carpophaga ænea*, has the bronzed shading of the back much deeper in the specimens from Basilan than in those from the central and northern islands, while those from Paragua have the wings much bluer in color. The Red Woodpecker, *Chrysocolaptes xanthocephalus*, from the central islands, has more red on the throat in the bird from Masbate than in the one from Panay and Negros. The Cockatoo and Racquet-tailed Parrot of Mindanao are decidedly smaller than the same species in the other islands. Other examples of the same kind are numerous, and there appears to be a tendency in every species to form as many varieties as it

inhabits distinct islands with separating sea channels broad enough to make the passage over difficult and infrequent.

The above facts make Philippine species and varieties geographical or local groups depending upon local causes for their existence. They show *isolation* to be the first and the necessary step in the formation of species.

The foregoing facts make the belief in the fusion of closely allied species, when thrown together, almost necessary. The volcanic character of the islands and the shallow seas separating them, with the observed marks of frequent changes of sea level, make it necessary to believe that the land areas of the Philippines have been continually varying and that, in multitudes of cases, closely allied species have been thrown together by the connection of islands formerly distinct. These closely allied species now no longer existing together, they must have disappeared either by the destruction of one or by their fusion. To one who has observed the likeness in size and coloring and notes and food of these allied forms, the latter is the only reasonable hypothesis for the greater number of cases.

A satisfactory explanation of many or most of the phenomena of distribution of genera and species in larger and continental areas may be found in giving the same prominence to isolation and fusion in the formation of the species occupying them.

RECENT LITERATURE.

McIlwraith's Birds of Ontario.¹—The first edition of Mr. McIlwraith's excellent manual, 'The Birds of Ontario,' published in 1886 (see Auk, IV, 1887, p. 245), was speedily exhausted, so that for some years past the

¹ The | Birds of Ontario | being a concise account of every Species of Bird | known to have been found in Ontario | with a | Description of their Nests and Eggs | and Instructions for collecting Birds and preparing | and preserving Skins, also Directions how | to form a Collection of Eggs | By Thomas McIlwraith | Member of the American Ornithologists' Union | — | Second Edition—Enlarged and Revised to Date | With Illustrations | — | Toronto | William Briggs, Wesley Buildings | Montreal: C. W. Coates | Halifax: S. F. Huestis | MDCCXCIV—8vo., pp. i-x, 11-426.

work has been unobtainable to many who desire to consult its pages. It is therefore with great pleasure that we welcome this valuable handbook, revised to date, much enlarged, and in a dress more befitting its scientific importance and popular interest. In place of the introductory essay 'On Birds and Bird Matters' of the first edition, we have here a few pages on the general subject, with special reference to migration, followed by a dozen pages of directions as to how to collect and prepare specimens for the cabinet.

The species treated number 317 as against 302 in the first edition, to which nearly 400 pages of the work are formally devoted, giving about a page and a quarter to each species. The technical, descriptive portion of the text is printed in small type, the biographical in much larger type. The whole has evidently been carefully revised, and much new matter added to the biographies, which in many instances have been to a large extent rewritten, the recent literature of the subject having been placed under contribution. As the author himself says: "In the present edition, it has been my object to place on record, as far as possible, the name of every bird that has been observed in Ontario; to show how the different species are distributed throughout the Province; and especially, to tell where they spend the breeding season. To do this, I have had to refer to the notes of those who have visited the remote homes of the birds, at points often far apart and not easy of access, and to use their observations, published or otherwise, when they tend to throw light on the history of the birds observed in Ontario." Credit is of course duly given for the information thus obtained.

As ornithologists well know, the author of the 'Birds of Ontario' is well equipped for his task, and, as would be expected, has done his work well, the second edition being fully abreast of the subject, the few faults of the first edition having been corrected, and the more important recent discoveries in the field here covered being duly incorporated. The text is illustrated with numerous cuts, though none of them appear to be here for the first time published. An excellent portrait of the author forms a fitting frontispiece to the volume, which will doubtless prove a boon to the bird lovers of Ontario and adjoining Provinces and States.

We notice that the last bird given — inserted as an addendum — is the Black-capped Petrel (*Astrelata hasitata*), the record being based on a specimen found dead near Toronto, Oct. 30, 1893. This is of interest as making the third inland record for this species during the autumn of 1893, one having been taken at Blacksburg, Va., Aug. 30, 1893 (see Auk, X, p. 361), and another at Oneida Lake, N. Y., Aug. 28, 1893 (Auk, XI, p. 162). We have private information of the capture also of a specimen in Vermont at about the same time. Doubtless these occurrences of this little known sea-bird so far inland have some relation to the great cyclone of August 26-27, which proved so disastrous to property as well as bird life on the coast of South Carolina (cf. Wayne, Auk, XI, p. 85). —J. A. A.

Sharpe's Catalogue of the Fulicariæ and Alectorides.¹—In volume XXIII of the British Museum 'Catalogue of Birds,' embracing the two orders Fulicariæ and Alectorides, Dr. Sharpe has given us a most welcome contribution to systematic ornithology. The subject is treated with his usual ability and care, and of course after the stereotyped method of former volumes of this invaluable series. The family Rallidæ is considered as consisting of 187 species, distributed among 61 genera (the latter including several now extinct). The other families are comparatively small, numbering collectively 65 species, of which 30 belong to the family of the Bustards (Otidiidæ) and 19 to the Cranes (Gruidæ).

A feature of the volume is the large number of recently new generic names introduced, proposed and first published mainly within the year 1893 by Mr. Sharpe in the Bulletin of the British Ornithologists' Club. In addition to these (to in the family Rallidæ alone) various groups usually treated as subgenera are here raised to full generic rank. Among the latter, as regards North American birds, are *Coturnicops* Bon. (recently 'emended' into *Ortygops*), and *Creciscus* Cab. *Limnogeranus* appears as a new generic name for our Whooping Crane, while *Ionornis* Reichen. is treated as a synonym of *Porphyruia* Blyth, our Purple Gallinule thus standing as *Porphyruia martinica*. As regards species and subspecies, *Rallus beldingi* is considered as a subspecies of *R. elegans*; *R. scottii* is made a synonym of *R. saturatus*, the latter, together with *crepitans* and *obsoletus*, being treated as subspecies of *R. longirostris*. Of forms extra-limital to the A. O. U. Check-List, *R. coryi* is made a synonym of *caribœus*, the latter also standing as a subspecies of the *longirostris* group. We infer from this that Mr. Sharpe has never seen *R. coryi* (his three specimens of *caribœus* are recorded as from Jamaica). *R. longirostris cubanus* Chapman is entered in the 'Addenda,' and in the 'Systematic Index,' as a subspecies of *longirostris*, as described. A closely related South American form of *R. virginianus* is separated specifically (and figured) as *R. æquatorialis*. All of the American forms of *Gallinula* being referred to *G. galeata*, the habitat of this species is given as "the greater part of the New World," while, following Stejneger, *G. sandwichensis* is also recorded as a subspecies of *galeata*. The Andean *G. garmani* is considered as "a fairly distinguishable race," but, it is added, "if the Chilian and Bolivian bird is recognized as a race, the West Indian bird will have to be admitted as a subspecies also." As a matter of fact, however, the differences presented by the latter are trivial in com-

¹ Catalogue [of the] Fulicariæ [(Rallidæ and Heliornithidæ)] and [Alectorides] (Aramidæ, Eurypygidae, Mesitidæ, Rhinocerotidæ, Gruidæ, Psophiidæ, and Otidiidæ) [in the] Collection [of the] British Museum. [By] R. Bowdler Sharpe. [London : Printed by order of the Trustees. [Sold by] Longmans & Co., 39 Paternoster Row; [B. Quaritch, 15 Piccadilly; Dulau & Co., 37 Soho Square, W.;] Kegan Paul & Co., Paternoster House, Charing Cross Road;] and at the [British Museum (Natural History), Cromwell Road, S. W.] 1894. = Catalogue of the Birds in the British Museum, Vol. XXIII. 8vo., pp. i-xiii, 1-353, pl. i-ix.

parison with those which separate *garmani*, in which, in Lake Titicaca specimens, the length of the wing runs up to 9.10 inches, with an average of 8.50,—a difference one-fourth to one-third of the total length of the wing in average *galeata*, combined with much darker coloration and a great reduction in the amount of white. In West Indian and Bogota specimens there is very little reduction in size from average *galeata*, but the frontal shield is larger, the back darker and less olive, and the front of the tarsus more or less strongly tinged with red—the latter a feature sometimes seen in Florida specimens. While we should not deem it advisable to name the West Indian form, the case is very different with the Andean form, although it may grade into *galeata*.

According to the characters given for the separation of the subspecies of the *Aramides cayanea* group, of six Trinidad specimens (all females), collected by Mr. Chapman, two would be referable to *A. cayana* and four to *A. cayanea chiricote*, in these last the hinder part of the crown and nape being strong rufous brown, instead of gray. This feature is thus shown to be variable in specimens from the same locality, independently of either sex or season. The species and subspecies described apparently for the first time in the present work are: *Rallus aquatorialis* (figured, pl. ii); "*Limnopardalus rythirhynchus*, subsp. β . *Limnopardalus vigilantis*" (figured, pl. iv); *Aramides gutturalis* (figured, pl. v); *Porzana galapagoensis*; "*Corethura elegans*, subsp. α . *Corethura reichenovi*"; *Grus lilfordi*.—J. A. A.

Elliot's Monograph of the Pittidæ.—Part III, dated February, 1894¹, contains the following species: *Eucichla guiana*, *Pitta loriae*, *P. steerii*, *P. concinna*, *P. rubrinucha*, *P. nepalensis*, *P. koeki*, and *P. celebensis*. Figures are given of the young birds in first plumage, as well as of the adult male and female, in two of the species (Blue-tailed Pitta, *Eucichla guiana*, and the Nepal Pitta, *P. nepalensis*), and there is also some account of the habits of these species. While the sexes are alike in coloration when adult, the young in first plumage are almost as different as possible from the adults. The Blue-tailed Pitta's nest is built in bushes six or eight feet above the ground, and is ball-shaped; the Nepal Pitta nests on the ground, while the Celebes Pitta (*P. celebensis*) nests "in a hole dug in the slope of a river bank." The eggs are in each case white, spotted and streaked with dark markings.—J. A. A.

A Bird-Lover in the West.²—A desire to widen the circle of her feathered friends has led Mrs. Miller further afield and in 'A Bird-Lover in the West' she gives us the results of her studies in Ohio, Colorado, and Utah.

¹ For notice of Parts I and II, see Auk, XI, pp. 62 and 173.

² A Bird-Lover in the West. By Olive Thorne Miller. Boston and New York. Houghton, Mifflin & Company. The Riverside Press, Cambridge, 1894. 12mo., pp. i-vii, 1-278.

This volume shows no diminution of the enthusiasm so characteristic of the previous works of this author and, giving evidence of increased descriptive powers, possesses an interest which must appeal not alone to the ornithologist but also to those who cannot claim even a passing acquaintance with birds.

Indeed the reviewer can instance the case of a reader who, though unable to recognize three species of birds in the field, on chancing to pick up this little volume, was so fascinated that he eagerly read to the end.

As accurate records of painstaking, conscientious work, Mrs. Miller's observations have permanent scientific worth, but it is as a voice teaching the beauties of bird-life that her words have their chief value. She does not tell us what she has read or heard of, but what she has seen, and she does this so attractively that it will be strange indeed if among her readers there be not some who will be induced to go afield and find for themselves that nature is one great inexhaustible volume whose charms no writer can adequately portray.

That Mrs. Miller appreciates the necessity of accuracy is evident, and we regret to see, therefore, that her careful work should be marred by obvious errors in identification. Thus the Towhee found breeding at Colorado Springs was probably *Pipilo maculatus megalonyx*, not *P. erythropthalmus*; the Horned Lark seen there in June was doubtless *Otocoris alpestris arenicola*, not the more boreal *Otocoris alpestris lucolæma*, while the Hummingbird recorded from the same locality as *Trochilus columbris* may have been *Selasphorus platycercus*. Again, the Grackle of Ohio is the Bronzed, not the Purple, variety.—F. M. C.

The Birds of Kentucky.¹—This is an unfortunate addition to the number of faunal lists by compilers who have a very limited knowledge of birds and less of the literature of ornithology. The author states that it is based on observations and collections made in various parts of the State "since July, 1889," and adds that "the original list, as thus prepared, has been extended by including species observed by Audubon [and] by Beckham in Spencer [lege Nelson] County." It appears that about one-half of the 253 species given have been included on the authority of these ornithologists.

The author ignores trinomials and thus commits the error of giving such European species as *Certhia familiaris*, *Loxia curvirostra*, *Corvus corax*, etc., a place in the Kentucky fauna, while *Turdus aonalaschkae*, *T. ustulatus*, *Peucaea aestivalis* and others are introduced in the same way. "*Sylvania (?) microcephala* Ridgway" and *Dendraca carbonata* Audubon are evidently admitted as species which may have claims to recognition, and *Aphelocoma floridana* is given on the basis of its having "said to have been taken in Kentucky."

¹ A Preliminary List of the Vertebrate Animals of Kentucky. By H. Garman, Lexington, Ky. Bull. Essex Inst., XXVI, 1894, pp. 1-63. Birds, pp. 7-33.

The author is apparently not familiar with Pindar's 'List of the Birds of Fulton County, Kentucky,'¹ which contains some twenty-one species not mentioned in the present list. In the present state of ornithological knowledge there is no excuse for work of this kind, and it would have been better, not alone for the reputation of the author, but for the cause of science, had he submitted his manuscript to a competent reviser. The author's conservatism in excluding species for which he had not at least some record and placing them in a separate list of 'Additional Species which may occur in Kentucky,' is the only thing to be said in his favor.—F. M. C.

Cherrie on Costarican Birds.²—This paper is based on collections and observations made in southern Costa Rica from November, 1891, until April, 1892. It enumerates 199 species, 14 of which are new to the apparently inexhaustible avifauna of Costa Rica. Of this number four species are considered as new to science; three of these have been characterized in previous papers, while one, *Henicorhina pittieri*, is here described for the first time.

The annotations under each species consist of a statement of the number of individuals collected at the various localities visited, remarks upon variations in plumage, and brief notes on habits and comparative abundance or rarity.—F. M. C.

Jouy on Central Mexican Birds.³—The late Mr. Jouy landed at Tampico, October 13, 1891, and proceeded to St. Luis Potosi, where he remained until the following January. He then continued his journey to Guadalajara where he was resident for seven months. From these two points he made numerous more or less extended excursions into the surrounding country, making collections and observations on which the present paper is largely based, though several species are included "which were collected at Guaymas, on the Gulf of California, and also a few from the mountains in Sonora, 32 miles south of the border town of Nogales."

This list numbers 111 species of which 11 are water-birds. *Catharus mel pomene clarus* (Barranca Ibarra, Jalisco), *Psaltriparus melanotis iulus* (Hacienda El Molino, Jalisco), and *Spinus psaltria croceus* (Panama) are described as new forms, while *Basileuterus rufifrons jouyi* has been previously described by Mr. Ridgway.

¹ The Auk, VI, 1889, pp. 310-316.

² Exploraciones zoológicas efectuadas en la parte meridional de Costa Rica por los años de 1891-1892. I. Aves, por Geo. K. Cherrie. Taxidermista del Museo Nacional. 1893. San José de Costa Rica. Tip. Nacional. 12mo. pp. 1-59.

³ Notes on Birds of Central Mexico, with Descriptions of Forms Believed to be New. By P. L. Jouy. Proc. U. S. Nat. Mus., XVI, 1894, pp. 771-791.

The annotations are brief but interesting and are supplemented by detailed notes on the colors of the irides, bill, feet, etc., based on comparison of the fresh specimen with the plates in Mr. Ridgway's 'Nomenclature of Colors.' Though sadly handicapped by failing health Mr. Jouy's love of his favorite pursuit showed no diminution, and the material for this, his last paper, was gathered under conditions to which most naturalists would have succumbed.—F. M. C.

Verrill on the Birds of Dominica.¹—Mr. A. H. Verrill collected in Dominica during March, April, and May, 1890, and was joined by his brother, the author of this paper, "the latter part of April." As a result of their combined ornithological researches in several parts of this wild and rugged island he presents a well-annotated list containing 54 species, including 5 species not given by previous writers, thus raising the number of Dominican birds to 64. *Geotrygon mystacea*, of which no specimens were preserved, has since been procured by the writer of this review from a local collector.

Several other species are included on the descriptions of natives or as observed but not collected, and although it is quite probable these species actually occur, a little more conservatism in this direction would have been advisable. *Vireo calidris*, given as "very likely" a summer visitor only, was found by the reviewer to be a common bird during the past February.

Interesting notes on habits and local distribution are presented, but by far the most valuable part of this paper consists in observations, many of them entirely new, on the nesting of twenty species of Dominican birds, among which *Falco columbarius* is included. Half-tone figures of the nests of seven and eggs of three of these are given. It appears that in Dominica the breeding season is nearly over by the latter part of April, at which time it is approaching its height in Trinidad. The difference in time, however, is apparently not a real one but is due to the limitations of the Dominican avifauna. In Trinidad the nearest representatives of the twenty species found breeding by the Messrs. Verrill, so far as known, also breed before May 1, but many others have not then begun to nest.

Mr. Verrill does not seem to be familiar with Colonel Feilden's important paper on 'The Deserted Domicile of the Diablotin in Dominica.'²—F. M. C.

¹ Notes on the Fauna of the Island of Dominica. With lists of the species obtained and observed by A. H. and G. E. Verrill. By G. E. Verrill. Trans. Conn. Acad., VIII, 1892, pp. 315-359, pl. i-iii. List of Birds obtained and observed, with Notes on their Habits, Nests, and Eggs, pp. 319-351.

² Trans. Norfolk and Norwich Naturalists' Society, V, 1889, pp. 24-39.

Raine's Bird-Nesting in North-West Canada.¹—From what we can gather this work has not as yet come into the hands of many of our professional ornithologists, nor has it up to the present time been reviewed in the pages of 'The Auk.' It is an octavo volume of about two hundred pages, and its illustrations consist in the main of six colored plates of eggs of birds (61 species), together with numerous lithographs of birds, scenery, and heads of mammals, and a variety of text-cuts. Both the colored and uncolored lithographs were drawn upon stone by the author himself, so he is wholly responsible for them. Apparently Mr. Raine spent the month of June, 1891, in the Manitoban region, and the present book is a running narrative of his doings there during that time. From the 'Preface' we learn that though "the title of the book would lead readers to expect the work to be purely Oölogical, it will be found to treat on matter not strictly Ornithological. I have branched off and given descriptions of the habits of the more important animals inhabiting the region traversed, and have also given a description of the scenery between Toronto and Vancouver. . . . I have given accurate descriptions of the birds' eggs, and also given their measurements. . . . The book does not describe all the species which inhabit the Northwest, for many common species known to be summer residents were not even observed, and the songs of many warblers, vireos, sparrows, and other small birds were heard in the bluffs and along the wooded streams, but I could not recognize the species."

It is evident from all this that Mr. Raine claims for his book, first, a popular descriptive part; and secondly, a scientifically accurate oölogical part. We propose only to concern ourselves with the latter, and that as briefly as possible. We would hardly even be expected here to take our author's ludicrous figures of birds and their nests into consideration, for both space and our time are altogether too valuable to be squandered in any such manner. Judging from its unfeathered tarsi, his figure of a Golden Eagle, for example, evidently does not represent that bird, and it may be cited as an average specimen of the work of this thoroughly unreliable artist.

We turn first then to the six colored plates of the eggs. None of these are numbered *on the plate*, and as the figures on *each plate* run 1, 2, 3 and so on, it renders it impossible to refer to any particular specimen either by number or plate. Personally, I have compared many of these colored drawings with large series of eggs of the species they are supposed to represent, and we may say, as a rule, they are, in the matters of outline, coloring, and measurements, highly inaccurate, and can in no way be depended upon.

Lastly, this work is so pregnant with statements in regard to nests and eggs of birds which Mr. Raine alleges to have either seen or taken in

¹ Bird-Nesting in North-West Canada. Walter Raine. Illustrated. Hunter, Rose & Co., Toronto: 1892.

the region visited, that one stands quite aghast as he reads them. These statements in no way agree with the experiences of other naturalists who have gone carefully over the same ground, nor do they agree with what has been published in the premises. We very much question the statement that "The Rusty Grackle is common between Winnipeg and Portage-la-Prairie, usually making its nest on the ground like a song sparrow" (p. 112). I am inclined to think that our author has confused the Rusty Grackle with Brewer's Blackbird. In a similar manner he has probably confused the Northern Shrike with the White-rumped Shrike, and the statement that the "great Northern Shrike breeds plentifully around Crescent Lake, Assiniboina," would appear to be vouched for by the author of this book alone.

What Mr. Raine says about the breeding of the Evening Grosbeak is also characterized by a certain amount of looseness and conjecture. We are told "This species breeds in the Northern Rocky Mountains, but its eggs are almost unknown in collections and consequently very valuable. It is reported as a common resident in the forests of Washington Territory. A nest of four eggs, on the point of hatching, was found in Yolo County, California, May 10, 1886, but could not be preserved. These eggs are said to be similar to those of the Black-headed Grosbeak."

Finally, it will be interesting to oölogists to know that Mr. Raine, on two or three occasions, collected the eggs of the Little Brown Crane in this region. We wonder if they were not the nests and eggs of the Sand-hill Crane that Mr. Raine met with? This surmise would appear to present the true facts in the case, in as much as, so far as our author's account of his next visit to this region has been given us (*The Nidiologist*, Jan. and Feb. 1894), he says never a word about finding any more nests and eggs of the Little Brown Crane, but speaks with confidence about Sand-hill and Whooping Cranes breeding throughout many parts of the country he explored.

In addition to his own personal collecting, we understand Mr. Raine is a very extensive purchaser of eggs from collectors in many other parts of the world; and he also keeps out a corps of his own paid collectors. Such practices require great caution, as there are collectors and collectors, and birds' eggs and birds' eggs. From a scientific point of view, a bird's egg is valueless unless its identification is absolutely sure. Published oölogical works are likewise scientifically valueless if the statements they contain are rested upon accounts that cannot be verified beyond all peradventure of a doubt. If Mr. Raine hopes to build up a solid reputation as a perfectly reliable avian oölogist, he should constantly keep before his mind the hints we have, with all kindness, endeavored to give him in this brief review of his '*Bird-Nesting in North-West Canada*.' Let him apply these hints to the next volume he has already promised us, and not only will the lay reader look with interest for the coming out of his books, but they will also be welcome additions to the library of the scientist.
—R. W. S.

Publications Received.—**Bocage**, J. V. Barboza du. (1) Oiseaux nouveaux d'Angola. (2) Aves da Galanga. (*Jorn. de sci. math., phys. e nat.*, III, 1894, pp. 153-166.)

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GENERAL NOTES.

Northern Phalaropes off the New Hampshire Coast.—While taking my new boat the 'Phalarope' from Rockaway, Long Island, N. Y., to Casco Bay, Maine, I met with numerous flocks of Northern Phalaropes, twenty miles off the New Hampshire Coast, August 9, 1893. I was running my course for Cape Elizabeth and found on coming within sight of land that they disappeared.—REGINALD I. BRASHER (*in letter to WILLIAM DUTCHER*).

Turkey Vulture in Eastern Massachusetts.—Mr. H. W. Page of Boston called my attention some time ago to a Turkey Buzzard (*Cathartes aura*) which was taken in Weston, Massachusetts, early in April, 1893, and I visited the bird April 5, 1894. Mr. Samuel Smith, who has a farm in the western part of the town of Weston (about fourteen miles west of Boston), shot the bird there, merely breaking its wing. He has kept the bird ever since out of doors in a netting cage about five feet square with a box to retire to, having one side open; he has fed the Vulture on raw fish, raw beef, muskrats, etc., and the bird appeared to me to be in very good condition, except for the general condition of its plumage and the fact that the broken wing set in such a way that it is held at an unnatural angle, slightly elevated.—FRANCIS BEACH WHITE, Cambridge, Mass.

Obliteration of the Tarsal Scutella in *Accipiter cooperi* in Texas.—The daring sallies of this species often costs it its own life, but I have never known it to chase a barnyard fowl through an open window and under a bed, as is recorded¹ of the Goshawk.

December 5, 1893, sitting by my window I heard a scream from my child outside and on looking through the window saw her sitting on a hen-coop with a Cooper's Hawk making repeated swoops at the young chickens in the coop. The child was feeding the fowls through an opening and some of the food had fallen outside; at this the weaklings were picking when the assault was made. The chickens took shelter in the coop and the marauder perched in a lone tree in a field some two hundred yards away. Calling to my son, whose horse was standing saddled at the gate, he rode out and brought down the Hawk as it sought safety in flight.

On taking the bird in hand I at once saw that I had a specimen with *fused tarsal scales*. Having noted Dr. Coues' record² that such a state had not been observed in *A. cooperi*, I at once began an investigation by writing to sundry ornithologists in position to have information upon this subject. The result of this investigation goes to show that the word *fusion* is rather out of place when applied to certain Texan examples, as the scales are not only fused but so much obliterated as to be indistinguishable under a hand lens. After I had learned that the lines of the individual scutella were obsolete in at least two specimens I had collected in Cooke County, Texas, I became more pointed in my interrogations, in some instances questioning my correspondents a second time (no doubt to their annoyance) on the subject.

Following are some of the replies as to *fusion* in northern and eastern specimens:—

"None of my other specimens (I have large series) show complete fusion, but in several the divisions between the scales are not at all distinctly marked."—W. B., Dec. 23, 1893.

"I would say that to the best of my recollection I have never seen nor heard of a specimen of *Accipiter cooperi* in which the tarsal scutella were fused."—R. R., Dec. 11, 1893.

"Replying to your inquiry of the 16th the tarsal scutella of adults of *A. cooperi* and *A. velox* are normally fused."—F. M. C., Dec. 22, 1893.

Below I quote some replies relative to the obliteration of the lines marking the divisions between the individual scales:—

"Most of my adult Massachusetts Cooper's Hawks show distinct scales on the tarsus. In one or two they are somewhat indistinct, but in no case quite obsolete."—W. B., Cambridge, Mass., Jan. 24, 1894.

"As I wrote you previously in answer to the same question *Accipiter*

¹ Hatch, Birds of Minnesota, p. 184.

² Birds of the Northwest, p. 335.

cooperi NEVER (as far as my observation goes and I have examined many) has "the lines separating the tarsal scutella obliterated."—R. R., Smith. Inst., Feb. 5, 1894.

"We have quite a number of adult *Accipiter cooperi* in the Museum, but none show the fusion of the tarsi so complete as to have the lines of the individual scales *obliterated*."—H. Nehrling, Milwaukee, Wisc., April 28, 1894.

"*Accipiter cooperi*, No. 756, Collection University of Minn., ♂ ad., Minneapolis, Minn. Scutella of tarsi completely fused but showing distinct transverse markings or furrows where the scales come together. Not fused near the tarso-metatarsal joint."—T. S. R., March 10, 1894.

It will thus be seen that incomplete *fusion* occurs in Massachusetts, *complete fusion* in Minnesota, and *obliteration* in Texas. Mr. Wm. Brewster implies *obliteration* in a specimen I sent him from this region. In my earlier notes my records do not discriminate between *fusion* and *obliteration*, and the specimens (if preserved) have passed from my hands. The following entries are from my notes:—

"Nov. 5, 1885. One shot from my front gate post. Scales of tarsi *fused*.

"March 2, 1887. D. F. Ragsdale shot one with scales of tarsi *fused*.

"Feb. 28, 1889. ♀ ad., Gainesville, Tex., Coll. Wm. Brewster, state of fusion complete; *obliteration implied in epistle*.

"Dec. 5, 1893. Ad. ♀ shot with tarsal scutella *obliterated*; moulted rectrices. Coll. G. H. R."

I should state that the *obliteration* in the specimen now in my collection does not extend to the tarso-metatarsal scales.

It would be interesting to know what per cent. of adult specimens from Texas have the transverse lines *obliterated*. It would be still more interesting to know the *cause* of such disappearance.—GEORGE H. RAGSDALE, Gainesville, Texas.

[The variance in the views expressed by Mr. Ragsdale's correspondents seems to depend upon the definition of the term 'fused.' Mr. Ragsdale himself clearly appreciates the difference between 'fusion' and 'obliteration' of the tarsal scales but he evidently did not emphasize this difference in making his inquiries.

In quite young specimens of *Accipiter cooperi* the tarsus is distinctly scutellate, the scales, especially those at the distal extremity of the tarsus, being more or less imbricated.

In adults the scutella are fused on partially ankylosed and the tarsal envelope then becomes entire. In none of our sixteen adult specimens, however, have I observed the complete *obliteration* of the lines of fusion, or change from a scutellate to a booted tarsus which Mr. Ragsdale reports, though in several examples, notably one from New Jersey, the outlines of the scales are nearly obsolete.—FRANK M. CHAPMAN, American Museum of Natural History, New York City.]

The Barn Owl (*Strix pratincola*) in Northern Vermont.—A male Barn Owl was killed in a barn in Lyndon, Vt., June 4, 1894, and bought by a gentleman in St. Johnsbury. The measurements of the bird were as follows: Length, 16.50; extent, 45.00; wing, 14.00; tail, 5.50; bill, 1.00; tarsus, 3.75. Its plumage was light in color and upon skinning, it was found to be very thin and muscular as though it had led a hard life.

The first known occurrence of a Whip-poor-will (*Antrostomus vociferus*) in this town was noted on May 5. They are frequent ten miles south but have not been known here before.—MARTHA G. TYLER, Curator of the Fairbanks Museum, St. Johnsbury, Vt.

Observations on the Ruby-throated Hummingbird.—One 27th of May my son discovered a Hummingbird at work upon her nest, and drew for me a map of the locality by which I had no difficulty in finding the spot. It was well in the depths of an eighty acre forest. I watched my opportunity and while the bird was away for material succeeded in obtaining a desirable seat for observation. The saddle was already formed and the nest evened up to a platform level with the upper surface of the limb. It was placed beyond the middle of a long, slender maple branch about fifteen feet above the ground. The bird always followed the same direction whenever she went for material. Oftener than otherwise she returned laden to her nest in thirty-nine seconds after she left it—now and then more; once ninety seconds. I also spent much time there the 28th and 29th, and find the history of those days very similar to that of the 27th. Occasionally she took a vacation for food and rest; but those vacations were short. On May 30, at two P. M., the cup was complete and the bird was carrying silk and lining it. For this material she would be gone about as long again as for that of the outside. The next day, May 31, she was sitting. During incubation she sat lightly on her nest a few minutes, then off as many, and looked brightly about her while on her eggs.

On June 8 I found my bird in trouble; another female Hummingbird was trespassing. The aggressor would hover over the nest, swoop back and forth above it like a pendulum, alight with a tantalizing gesture on a twig close beside it, or, with a squeal, dart under it, and each time she came near would get driven away by the sitting bird. Twice I saw her rob the nest, once of lichens from the outside and once a good bill-full of silk from the lining. The poor mother came back to her eggs as often as she was disturbed. After watching the constant conflict for more than two hours, I left them still battling. The next day the nest was unoccupied. During all these thirteen days—I had spent much time in close observation—I did not once see a male Hummingbird in the vicinity of the nest. It was the female who did all the labor of nest-making and of incubation and who, as long as she could, valiantly defended her eggs and property. In my chosen seat I was not more than twenty feet from

the nest and entirely unhidden; yet the bird paid no more attention to me than she might had I been a part of the tree I very quietly leaned against.

I once saw a female Hummingbird gather lichens from the body of a beech tree. She held herself poised before it, darting upon it again and again, until she had in her bill all she wished to carry.

About nine o'clock one spring morning, when lilacs were in bloom, we discovered that the old lilac bush by the well was 'swarming' with Hummingbirds—just come; we knew they were not there a few minutes before. There are five large lilacs on our premises and those of a near neighbor. On investigation I found four of these bushes alive, as it were, with Hummers—all females. The fifth bush, a Persian, they did not favor. The Persian lilac, with its slender, lithe branches and great, drooping clusters, is very beautiful when in bloom, but its flowers lack the sweetness of the common species. Then, all the time, there were birds in the air constantly coming and going from bush to bush. They remained the greater part of the day. I spent much time standing within one of those bushes. The birds seemed not in the least disturbed by my presence. There were seldom less than ten and often fifteen of them about the particular bush I was occupying. Every now and then one would alight and sometimes would pass her long tongue back and forth through her bill to free it from pollen. In the afternoon a male Hummingbird occasionally came to the flowers but was invariably driven away by the females. Towards evening the flock, apparently undiminished in numbers, disappeared as abruptly as it had appeared in the morning. On the following day the Persian lilac was still in its native purple, but the beauty was gone from the other four bushes; the flowers were a dull copperas color.

Once again I fell in with a wave of migrating Hummingbirds. These were in the eighty-acre forest and this time all males. These were not in a close flock as before, but were very plentifully spiced throughout the forest.

In a neighbor's orchard a Hummingbird sucked juice from an apple while a young girl was in the act of paring it.

Once, on one of my rambles, I stopped to talk with a friend in her garden. A stalk of double velvet marigolds, broken over the day before, drooped upon the ground. I suppose decay had set in, yet, as the flowers were still tolerably bright, I carried them with me when I resumed my walk. While pausing at a cornfield a Hummingbird, leaving the corn blossoms, came and leisurely fed from the marigolds in my hand, inserting its bill between the outer petals of the flowers.

I (and others also, no doubt) have found it a very common thing for Hummingbirds to be hovering and apparently feeding in the vicinity of dead branches—branches checking in the summer sun. Are they not feeding upon something attracted by decaying limbs,—insects invisible to our eyes?—JANE L. HINE, *Sedan, Ind.*

The Bobolink on the Coast of South Carolina.—I regret the misapprehension of my meaning that led to the criticism in the last number of 'The Auk,' p. 179, and the possible inference that I am careless as to my statement of facts. I intended simply to say that the Bobolink in the interior of the State (Chester County) was abundant only in the spring. It did not occur to me that the expression would be interpreted differently, as abundance on the South Carolina coast, in the northward as well as the southward migration, belongs to the common stock of ornithological knowledge of which I could hardly be supposed to be ignorant.—
LEVERETT M. LOOMIS, *Tryon, N. C.*

An Ingenious Pair of House Finches (*Carpodacus frontalis*)—It is generally believed that birds construct their nests year after year and generation after generation after the same plan. There are few observers, however, whose experience does not furnish illustrations of the fact that individual birds are capable of departing from the nest building methods acquired by inheritance, and of resorting to new and ingenious expedients. The following is a case in point, and I am much mistaken if the reader does not conclude that the nest-builders in question possessed a considerable degree of reasoning power as well as of ingenuity.

A pair of California House Finches (*Carpodacus frontalis*) built a nest in the corner of the piazza of a country store. So tame and confiding have these pretty Finches become that I am persuaded that the larger proportion of their nests are built, not in trees and bushes as formerly, but in all sorts of odd nooks and crannies about the house and barn; and even when they are compelled by the lack of facilities to resort to bushes and shrubbery, they choose those as close to the house as possible.

The pertinacity with which the House Finch clings to a chosen nook about a house when their nests are destroyed is amazing, and is equalled only by the English Sparrow. I have known five nests with their contents to be destroyed one after another, and each time the same pair set to work with apparent unconcern to build anew.

But to return to my nest. The proprietor of the store called attention to it, suggesting that if it was of any use to me I had better take it as he was about to destroy it for the reason that the finches were an unmitigated pest in the orchard. This statement, I grieve to say, there is too much reason to believe is true. And great is the pity, for its beautiful song, domestic habits, and pretty plumage give it a place occupied by no other American bird.

Viewed from below, the nest was seen to be balanced rather than firmly placed upon a narrow joist, and I was at a loss to comprehend how it was maintained there even in calm weather, to say nothing of the high winds that prevail in this locality. By means of a step-ladder I was soon able to solve the problem. Having about one-half finished the structure, the birds evidently recognized the insecurity of its position, and the location being in every other respect eligible they hit upon the following remedy.

Procuring a long piece of white string they carried one end well into the body of the nest and twined it around several sticks. Thence it was carried out like a guy rope to a nail that chanced to have been only half driven home, about six inches beyond the outer rim. Two turns were taken about the nail and the string then passed back to the nest and firmly interlaced with the twigs. The nest was then completed.

The string thus attached protected the nest from pitching forward—though the wind rocked it continually—while the wall protected it behind.

The work was not so deftly done as not to betray the novice in the weaving art, and a yearling Oriole might have smiled at the crude effort to steal its trade by its thick-billed relative. However, the evident purpose of *Carpodacus* was to tie down its nest so that it would stay, and appearances were but a secondary consideration. That the nest was securely anchored was evidenced by the fact that it contained five eggs upon which the female was peacefully setting quite regardless of the fact that it was within three feet of the head of every passer by.—H. W. HENSHAW, *Witch Creek, San Diego Co., Cal.*

Leconte's Sparrow (*Ammodramus leconteii*) in large numbers near Charleston, South Carolina.—Since the capture of this bird on January 26, 1886, and again on February 9, 1888, I have failed to detect the presence of this erratic Sparrow until December 6, 1893, when I shot an example in fall moult near Mount Pleasant. The next day I secured six specimens which were all in different stages of moulting. The moult was a slow one and it was not completed until January 15.

From December 6, 1893, to January 24, 1894, I secured forty individuals and could have obtained many more if I had had more time. They were to be found directly on the coast in 'broom grass' fields, which were quite boggy owing to long spells of rainy weather. The majority were shot on wing, but several were shot from the tops of live oak trees where they sought refuge after being repeatedly flushed from the ground. From the whole series only seven males were taken, the remainder being females.—ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

Taming a Chipping Sparrow (*Spizella socialis*).—In the spring of 1891 a Chipping Sparrow built its nest in a honeysuckle vine which covers a stairway and balcony to my studio. It was begun while I was absent from home for a few days, and was on the railing just at the head of the stairs. I therefore avoided the balcony as much as possible until one egg was laid, using an inside entrance from the house.

I then began the experiment of taming the birds, standing for long periods in the doorway until the mother bird would at last go back and forth quite freely to the nest, and would sit upon it while I was there, at a distance of perhaps four feet.

Soon I tried sitting upon the top steps of the narrow stairs, which brought my head on a level with the nest, and it was not long before she also tolerated my presence there. I was so near that we sat and looked into each other's eyes.

I kept crumbs scattered about the balcony, which both birds ate, and then put them on my outstretched hand, and accustomed her to seeing that, held first from the doorway, and daily nearer to the nest, till at last I could hold it close beside her, and she would venture to take a crumb or two. And then one day, out came the tiny creature on to my hand! She did so frequently after that, and was also quite ready to take the crumbs from between my lips, while she sat upon the nest, and would let me stroke and cover her with my hand. But after the eggs were hatched, of which there were only two, she was not so tame.

During all this time the male bird never became very familiar, only hovering occasionally about the nest while I was near, and eating the crumbs from the balcony.

I anticipated when the young birds flew having the whole family return daily to at least breakfast there, but a week passed without my being able to identify one of them, though I made advances to every 'Chipping-bird' I came upon, hoping to receive some sign of recognition.

At the end of that time we had a succession of rainy days, and in one of them hearing a chattering going on outside my door, I looked out, and on the balcony, in the pouring rain, sat side by side two fat ragged young Chippies, while the mother bird went busily from one to the other, feeding them with dry crumbs, which were not three feet away in the shelter of the door, where they could easily have helped themselves.

That was the last I ever saw of them. But the nest remained and was still there the following February. There had been warm days which brought a few Bluebirds, but then followed a snow and ice storm which kept the trees and shrubs coated with ice for several days. We had watched a small flock of Bluebirds, in apparent distress, hovering about the house on one of the coldest of these days, and as night came on a number of them tried to find shelter under the eaves of my studio door, but flew away again. Just at sunset, however, one of them came back, and flew straight into the deserted nest! I watched until dark and he was still there, and I concluded that he spent the night.

Last spring we noted an interesting instance of devotion in a mother bird to her young. A Least Flycatcher built its nest in a half dead apple tree in our dooryard. We had a very hot day when the birds were only a few days old, and there being no leaves to shelter them, they evidently suffered from the heat, their heads hanging from the nest. We noticed later that the mother bird had taken a position just above them, and with outstretched wings was trying to shield them from the sun. She remained there for fully two hours, not even leaving them to bring food. When we saw that she also was panting with the heat, we decided to come to the rescue, and hoisted with a rake a grain bag over the nest for an awning. Immediately the male bird appeared, and both of them seemed to understand that all was well, and went busily to work catching insects for the young birds, who rapidly revived.—AMELIA M. WATSON, *East Windsor Hill, Ct.*

Kirtland's Warbler in Northeastern Illinois.—As a very welcome addition to the birds of this State, I am pleased to announce the capture here by myself on the 7th of May, 1894, of a *Dendroica kirtlandi*. The specimen, an adult male in slightly worn plumage, was taken among hazel bushes on the edge of a clearing. Beyond this, and the bird's excessive tameness, allowing an approach to within a few feet, nothing can be said that will increase our very meagre knowledge of the habits of this rare bird. While in the bushes it impressed me as being a straggler and away from more congenial surroundings.—B. T. GAULT, *Glen Ellyn, Ills.*

The Water Ouzel in the Coast Range south of Monterey, California.—In March, 1894, several pairs of Water Ouzels (*Cinclus mexicanus*) were found by Mr. J. Ellis McLellan, a field agent of the Division of Ornithology and Mammalogy, U. S. Department of Agriculture, in a deep, cool cañon about 20 miles south of Monterey, near a place called Sur. The shaded slopes of this cañon are still studded with the majestic redwoods (*Sequoia sempervirens*), while the western alder (*Alnus rhombifolia*) is common along the banks of the creek. The Ouzels were singing boisterously. The commonest bird at this season (March) was the Varied Thrush (*Hesperocichla naevia*).—C. HART MERRIAM, *Washington, D. C.*

The Mockingbird in Wyoming.—During the afternoon of May 10, I was collecting birds among the stunted cottonwoods and willow brush of Crow Creek about two miles east of Cheyenne, when I drove out a large gray bird which appeared from a distance to be an entire stranger to me. I chased it down creek a quarter of a mile, when it doubled on me and went back to the place from which I at first flushed it. I was unable to get near enough to kill with No. 12 shot, but was compelled to use a charge of No. 6, and at a distance of sixty-five yards, while on the wing, brought down my specimen. The bird proved to be *Mimus polyglottos* in fine plumage. Continuing down creek another Mockingbird was flushed from the willow brush but was too wild for me to capture it that evening, although I devoted a full hour to the chase, following the bird for a mile or more. The next morning, the 11th of May, I visited the same locality and found my bird again, but only succeeded in shooting it after stalking it, antelope fashion, by crawling prone upon the ground for sixty yards through stunted rose bushes. I succeeded in getting near enough, however, to shoot the bird with No. 12 shot. I have mounted both birds and placed them in the Cheyenne High School collection.

On May 23 while collecting about a half mile below where these two birds were shot, I heard a singer which I at first thought was a Brown Thrasher, but on listening I heard strange notes and at once concluded it was another Mockingbird. The singer was located in a clump of willows about forty yards from the creek, and an equal distance from the nearest

willow brush. I tried a charge of the small shot but did not reach him. He flew out and I killed him with No. 6 shot on the wing, the bird falling about seventy yards from where I stood. The individual killed on the evening of the 10th was a female and the other two were males. All were fat and their stomachs were well filled with worms and water grubs, larvae, etc. Their feet were perfect in every way, the claws being sharp and showing not the slightest indication of having grasped the perch of a bird cage; and besides, the birds were exceedingly wild and shy. Then again cage birds as rare as the Mockingbird is in this latitude, and especially locality, do not go about in flocks, so, on the whole, I am satisfied that the birds came north with a flock of Brown Thrashers with which they were associating at the time I found them. I am not at all familiar with *Mimus polyglottos*, but one feature presented by the specimens captured appeared a little odd. The iris of the female was brown while that of both males was greenish yellow, much like the iris of *Oroscoptes montanus*, but not quite so yellow.—FRANK BOND, *Cheyenne, Wyoming*.

Bird Notes from Virginia.—The writer, in company with Messrs. C. W. Richmond and E. M. Hasbrouck, spent from May 14 to May 28, 1894, on Smith's Island, Northampton Co., Virginia, observing the bird life of that place. During our stay we identified sixty-two species of birds on the island, and noted a number on the adjacent mainland which were not seen on the island. The writer shot two females and one male *Tringa fuscicollis*, the first recorded instance of its occurrence in Virginia.

Terns, especially *Sterna antillarum* and *Gelochelidon nilotica*, seem to be rapidly diminishing in numbers, being far less common than I observed them on two previous trips in 1891 and 1892, when I was collecting in the vicinity of Smith's Island.

Tringa canutus was quite numerous, occurring in large flocks. May 25 hundreds of these birds were seen feeding along the extensive mud flats on the outer sea beach; some were in very highly colored plumage.

Ammodramus maritimus was breeding, and quite numerous; we secured forty-three specimens of this bird, and several sets of eggs.—EDWARD J. BROWN, *Washington, D. C.*

Connecticut Notes.—While collecting in a piece of thick woods near Greenwich, Fairfield Co., Conn., on the 25th of June, 1893, I found what at first appeared to be a nest of the Red-eyed Vireo, but which on closer inspection proved to be that of the Acadian Flycatcher (*Empidonax acadicus*). The nest contained three young several days old. The parent kept to the nest until I was within a yard of her, thus giving a good chance for identification. I think there are but two or three records of this species occurring in Connecticut.

On the 12th of July, while looking for *Helminthophila*, I took an adult female *H. lawrencii*. The bird is in every way like the female *H. pinus* excepting that the throat patch and stripe through the eye, which in the

male *H. lawrencii* are black, are in this specimen dusky olive-green. The specimen is quite similar to the one taken by Mr. H. W. Flint in New Haven several years ago.

The young in first plumage which this bird was attending when shot were in every respect typical *H. pinus*. The male parent was not found but I feel confident that it was *H. pinus*, as the young were well feathered and showed clearly the well defined black lores of the latter.—CLARK GREENWOOD VOORHEES, *New York City*.

Notes on Kansas Birds.—Mr. H. W. Menke, of Finney County, Kansas, at present a student in the University of Kansas, has noted in the county of his home four birds new to the bird fauna of Kansas. Finney County lies in the western and dryer portion of the State, and comprises chiefly high, dry plains. It is traversed by the Arkansas River flowing east from Colorado, but there is practically no timbered land in the county. The additions to the Kansas bird list are as follows:—

Carpodacus frontalis. HOUSE FINCH.—Five were taken by Mr. Menke out of a flock of fifteen on Jan. 5, 1892. The remnant of the flock was seen on the following day and again on the 7th. The birds were found about some stacks of alfalfa in a field of this western forage plant.

Piranga ludoviciana. LOUISIANA TANAGER.—A male was shot on May 20, 1893. On June 1, 1893, several pairs were seen in a small cottonwood grove in Kearney County (a county adjoining Finney).

Dendroica caerulescens. BLACK-THROATED BLUE WARBLER.—A male was taken in a deserted farm-house Oct. 17, 1891.

Hesperocichla naevia. VARIED THRUSH.—A single specimen was taken Oct. 17, 1891.

Mr. Menke has also taken in Finney County the Cinnamon Teal, the Red-breasted Merganser and the American Golden-eye, all rare Ducks in Kansas. A brother of Mr. Menke (Mr. G. G. Menke) took a set of nine eggs of the Black Rail (*Porzana jamaicensis*) on June 6, 1889. The Black Rail is a rare summer resident in Kansas. On April 23, 1893, Mr. Menke shot a Lewis's Woodpecker (*Melanerpes torquatus*), the second reported occurrence of this bird in the State. He also records the second occurrence of Clarke's Nutcracker (*Picicorvus columbianus*). Three birds were seen on Oct. 10, 1891. Mr. Menke also reports that the Pinon Jay (*Cyanoccephalus cyanocephalus*) which Col. Goss in his 'Birds of Kansas' (1891) calls a rare visitant, with but one authentic record of occurrence, was a common winter resident up to 1891, appearing in large flocks in the autumns of 1889, 1890 and 1891.—V. L. KELLOGG, *University of Kansas, Lawrence, Kans.*

Temperature and Nest-building.—On or about March 1, 1894, I saw a Blue Jay pressing its breast upon a few twigs in the crotch of a large post-oak limb. This tree, standing almost directly in the path of my daily walks, was watched for some two weeks and no birds being seen nor any

material added to the nest, I supposed it was abandoned, and neglected to give it more attention. My surprise can be well imagined when on April 6 I saw both parents at the nest, and a good foundation for the nest laid. The first part of March was warm, the temperature rising at one time to 91° F. in the shade. Later in the month seven inches of rain fell, with much cloudy and some freezing weather. Twice the temperature fell to 25° and the leaves were killed. Up to date, April 6, it has not risen to 80° in this month.

That temperature may affect the time of nesting seems almost proven in this case, and yet a set of Crow's eggs taken April 2 was so far advanced in incubation that it was difficult to extract the embryo. A set of Plumbeous Chickadee's (*Parus carolinensis agilis*) eggs of same date were in advanced incubation; but as these birds build in holes and line with fur, they are well able to endure a sixty-six degree change of temperature. Will some one tell us what is the accepted opinion of oölogist concerning temperature affecting nidification?—G. H. RAGSDALE, Gainesville, Texas.

Change of Habits in our Native Birds.—It would be as interesting, from an evolutionary point of view, to note any change in the habits of an animal, any change in the way it adjusted itself to its environment, as to note the change in its bodily form or structure. It seems to me that such a change is taking place with the English Sparrow. A dozen or more years ago when these aliens first became a feature in our fauna it seemed probable that our native birds would soon be entirely driven from the neighborhood of our cities and villages. Our Robins, Bluebirds, Catbirds, Grossbeaks, Sparrows, Martins and the like were mobbed, driven from their food and nests and generally taught to believe, with Charles Sumner, that "life is a serious business." In this section, at any rate, a change has gradually taken place. Either our native birds have unexpectedly developed powers of resistance at first unsuspected or the pugnacity of the English Sparrows has diminished, for certainly our own songsters have not been driven away but on the contrary seem as numerous as they were twenty years ago. For the past two or three years, since my attention was first called to the matter, I have seen but little if any persecution of our native birds by the foreign Sparrows; on the contrary, our own birds are now often the aggressors, and if they do not indulge in persecution themselves, are adepts at defence. Very commonly a Jay, Robin, or Catbird will from pure mischief hustle a flock of Sparrows into desperate flight. In and about Rockford, Ill., a place of 30,000 inhabitants, the native birds have not been so numerous in twenty years as in the two or three years just passed. The conditions of the adjustment between the Sparrows and our commoner birds have changed to some extent, it seems. As has been noted before, the abundance of the Sparrows may serve to explain the increase in the numbers of the smaller birds of prey, — with us notably the Screech Owl.—F. H. KIMCOLL, Rockford, Ill.

NOTES AND NEWS.

PIERRE LOUIS JOUY, born in New York City February 8, 1856, died in Tucson, Arizona, on March 22, 1894, of consumption of the lungs.

It is with sincere grief that we make the announcement, for we can but illly spare from our ranks men of his stamp, men who devote their lives to the study of Nature from pure and unselfish love of her, men whose first aim is truth and the beautiful, and whose own self comes in only for second place. He was, moreover, a man of keen observation and of sound judgment, qualities which under more favorable circumstances would have insured him a prominent rank among his fellow-workers. Finally, he was a gentleman to the core, honest to a fault, conscientious as few, in brief, a man to be trusted and relied upon. And as he felt, so he spoke; indignant at injustice and sham pretensions, he was often severe in his condemnation of what he considered a wrong, sometimes to his own detriment, though that had no influence with him, for he was above simulating. It is needless to add that being of such a character he was a delightful companion and a faithful friend to those who were fortunate enough to possess his confidence.

Although his interests and work were scattered over a wide field, ornithology was, from an early day, his favorite study, and naturally enough his first interest centered around the birds of Washington, D. C., where most of his life was spent, an interest which gradually extended to those of our entire continent. But Professor S. F. Baird, one of whose devoted pupils he was, had use for him in other fields, and as an opportunity offered itself in 1881 he went out to China and Japan, where he made extensive zoölogical and ethnological collections for the Smithsonian Institution. His ornithological collections from Central Japan were particularly valuable, both on account of their richness and quality, and especially because of the full notes and important observations which accompanied them. The ornithological results were embodied in a paper published in the 'Proceedings' of the U. S. National Museum, VI, 1883, pp. 273-318, one of the most important contributions to our knowledge of the Japanese avifauna. From Japan he went to Korea temporarily attached to the United States Legation. At the capital he at once set to work to bring together one of the largest and most valuable collections of natural history ever made in that distant country, then nearly entirely unknown, collections which were afterwards enriched and completed during a sojourn of several years at Fusán while holding a position in the Chinese custom service of Korea. These collections, after his return to this country, were acquired for the greater part by the U. S. National Museum, and it was always his intention and fondest hope to be able to work up the splended material which he had gathered, but the museum at first needed his services in other branches, and afterwards failing health, which

exhausted his strength and made it desirable to seek other climates, prevented the accomplishment of this desire. He went out again collecting, this time to Southern Arizona and Mexico, where, in spite of adverse circumstances, he continued his work and observations, helped by his faithful wife who shared the hardships and privations of these expeditions, till she finally closed his eyes in Tucson. The notes made during their stay in Mexico he was enabled to work up into a paper entitled 'Notes on Birds of Central Mexico, with Descriptions of Forms believed to be New' [see *antea*, p. 245], but he did not have the satisfaction of seeing it published, as it was not issued until shortly after his death (Proc. U. S. Nat. Mus., XVI, 1894, pp. 771-791).

Aside from the external circumstances which prevented him from publishing often, or voluminously, there were internal causes which impaired his literary productivity, viz., his artistic temperament and his varied interests in so many branches of science and art, which conspired against his becoming a narrow specialist. But this very thing made him so valuable a collector for others. He was not of the kind that gathers the stuff in by the bushel, or the ton, and to whom quantity is the first consideration, quality the second. He collected with discrimination; his preparation, particularly of the birds, was unexcelled; and his notes were full, to the point, and above all, reliable. Not until all the vast and varied material he gathered in so many lands has been worked up will it be fully appreciated how much science owes to the unpretentious, but honest work of Pierre Louis Jouy.—L. S.

WILLIAM C. AVERY, M. D., an Associate Member of the American Ornithologists' Union, died at Greensboro', Hall County, Alabama, March 11, 1894, at the age of sixty-two years. Dr. Avery was a graduate of Burlington College, Burlington, New Jersey, and later pursued his medical studies in both Philadelphia and Paris. He studied ornithology purely for the love of it, and his contributions to the science were by no means commensurate with his knowledge of it. His principal paper, published under the initials "W. C. A.", was entitled 'Birds Observed in Alabama,' and appeared in the 'American Field,' Vol. XXXIV, 1890, pp. 584, 607, 608; Vol. XXXV, 1891, pp. 8, 32, 55. It contains the results of many years' close observation and is the most important paper relating to the region of which it treats.

Dr. Avery's services to science, however, are to be reckoned by the assistance he gave fellow-workers rather than by his published writings. An appeal for information or specimens always met with a ready and enthusiastic response, and he sometimes made special trips to distant parts of the State to procure specimens requested by some correspondent.

Dr. Avery was a man of high classical and philological attainments and our journals attest his aid in solving some of the etymological problems which arise in zoölogical nomenclature.

DR. ALEXANDER THEODOR VON MIDDENDORFF, a Corresponding Member of the American Ornithologists' Union, died at his estate in Hellenorm, Liveland, Russia, Jan. 28, 1894, at the age of nearly 79 years. He was born at St. Petersburg, Aug. 18, 1815, and studied at Dorpat, taking his University degree in 1837. He afterward pursued his studies at the Universities of Berlin, Erlangen and Breslau, and later at the University of Kiew.

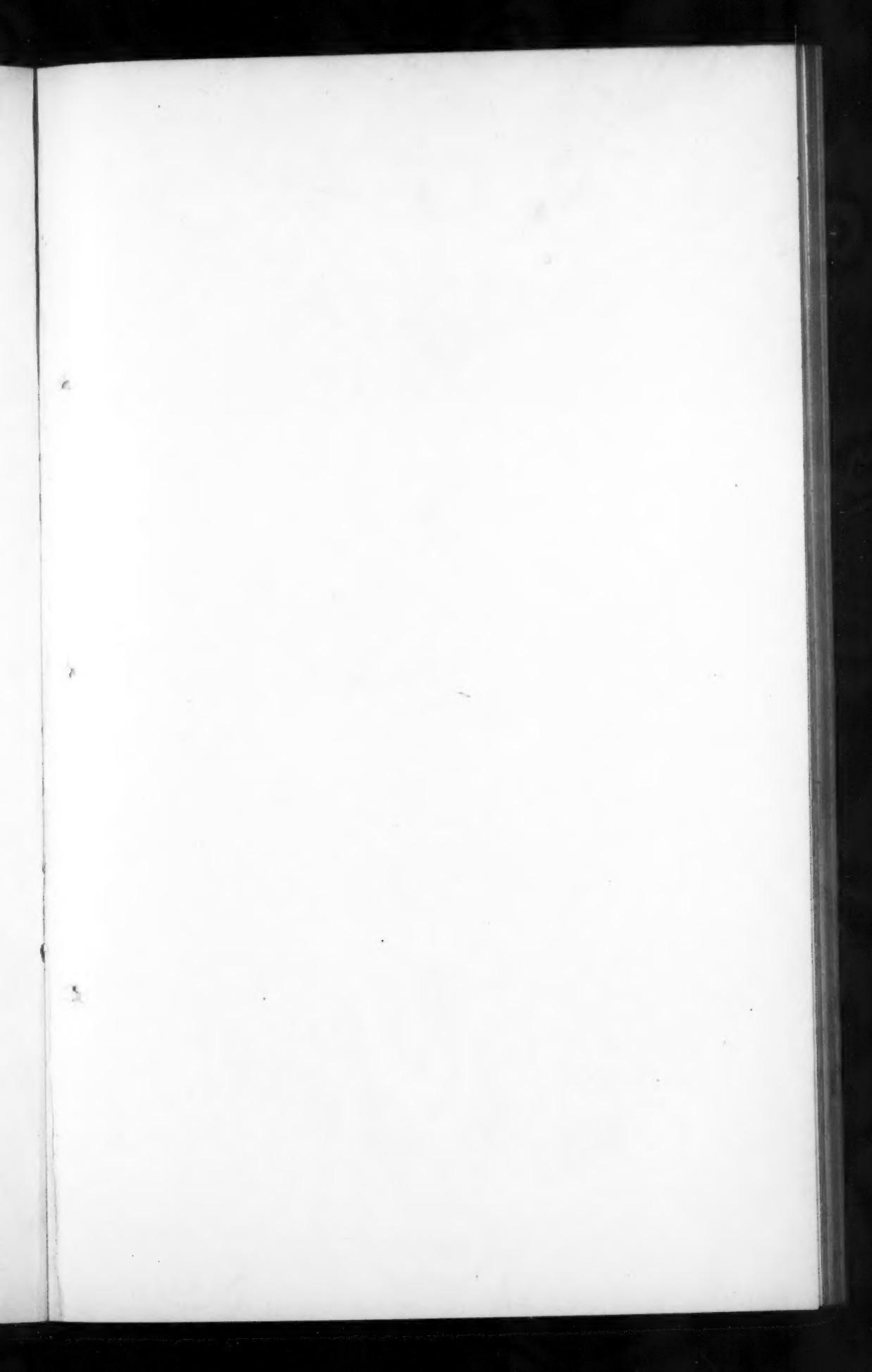
Dr. Middendorff is well known to naturalists everywhere for his great work, 'Reise in den äufsersten Norden und Osten Sibiriens' (four volumes, quarto, 1847-59), as remarkable for the erudition displayed as for the breadth of the field covered by his investigations. His other principal ornithological publication is his well-known 'Die Isepiptesen Russlands. Grundlagen zur Erforschung der zugzeiten und zugrichtungen der Vogel Russlands' (1855). He wrote also extensively on mammals and on mollusks.

DR. LEOPOLD VON SCHRENCK, a Corresponding member of the American Ornithologists' Union, died Jan. 20, 1894, aged 68 years. Dr. Schrenck is perhaps best known to ornithologists for his work entitled 'Reisen und Forschungen im Amur-Lande in den Jahren 1854-56,' in two quarto volumes, 1858-60, over 350 pages of volume I being devoted to birds. He was born at Dorpat, April 24, 1826, and at the time of his death was Director of the Ethnological Museum of the Royal Academy of Sciences at St. Petersburg. His name is naturally associated with those of two other celebrated Russian explorers and naturalists — Dr. von Middendorff and Dr. Gustav Radde — who at nearly the same time were exploring Asiatic Russia, and whose works may be well termed 'epoch-making' as regards the ornithology of this previously little known region.

'FOREIGN FINCHES IN CAPTIVITY,' by Arthur G. Butler, Ph.D., etc., is announced for publication in ten parts, royal quarto, with between 300 and 400 pages of text and sixty beautifully colored plates, the first part to be issued June 15, and the remaining parts at intervals of six weeks. The edition will be limited to 300 copies. The publishers are L. Reeve & Co., 6 Henrietta St., Covent Garden, London.

READERS of 'The Auk' will be interested to know that Mr. Charles B. Cory has recently sold his large collection of birds and his ornithological library to the Field Columbian Museum of Chicago, in which institution he has also accepted the Curatorship of the Department of Ornithology, which is to be entirely under his direction.

It may also be noted that Mr. William Brewster and Mr. Frank M. Chapman returned about May 1 from their trip to the Island of Trinidad, and the publication of the ornithological results of their work may soon be expected.





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